Volume XXVII Number 9

# The Journal OF Political Economy

PUBLISHED BY THE UNIVERSITY OF CHICAGO
IN CO-OPERATION WITH
THE WESTERN ECONOMIC SOCIETY

## NOVEMBER 1919

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THE UNIVERSITY OF CHICAGO PRESS
CHICAGO, ILLINOIS, U.S.A.

THE CAMBRIDGE UNIVERSITY PRESS, LONDON AND EDINBURGH
THE MARUZEN-KABUSHIKI-KAISHA, TOKYO, OSAKA, KYOTO, FUKUOKA, SENDAI
THE MISSION BOOK COMPANY, SHANGHAI

November 1919 Vol. XXVII, No. 9

# The Journal of Political Economy

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**The Journal of Political Economy** is published monthly, except in August and September, by the University of Chicago at the University of Chicago Press, 5750 Ellis Avenue, Chicago, Illinois. ¶ The subscription price is $3.00 per year; the price of single copies is 35 cents. Orders for service of less than a half-year will be charged at the single-copy rate. ¶ Postage is prepaid by the publishers on all orders from the United States, Mexico, Cuba, Porto Rico, Panama Canal Zone, Republic of Panama, Hawaiian Islands, Philippine Islands, Guam, Samoan Islands, Shanghai. ¶ Postage is charged extra as follows: For Canada, 30 cents on annual subscriptions (total $3.30), on single copies 3 cents (total 38 cents); for all other countries in the Postal Union, 42 cents on annual subscriptions (total $3.42), on single copies 5 cents (total 40 cents). ¶ Patrons are requested to make all remittances payable to the University of Chicago Press in postal or express money orders or bank drafts.

**The following** are authorized to quote the prices indicated:

For the British Empire: The Cambridge University Press, Fetter Lane, London, E.C. 4, England. Yearly subscriptions, including postage, 14*s.* each; single copies, including postage, 1*s.* 8*d.* each.

For Japan and Korea: The Maruzen-Kabushiki-Kaisha, 11 to 16 Nihonbashi Tori Sanchome, Tokyo, Japan. Yearly subscriptions, including postage, Yen 6.85; single copies, including postage, Yen 0.80.

For China: The Mission Book Company, 13 North Szechuen Road, Shanghai. Yearly subscriptions, $3.00; single copies, 35 cents, or their equivalents in Chinese money. Postage extra, if mailed direct outside of Shanghai, on yearly subscriptions 42 cents, on single copies 5 cents.

**Claims for missing numbers** should be made within the month following the regular month of publication. The publishers expect to supply missing numbers free only when losses have been sustained in transit and when the reserve stock will permit.

**Business correspondence** should be addressed to The University of Chicago Press, Chicago, Ill.

**Communications for the editors** and manuscripts should be addressed to the Editors of THE JOURNAL OF POLITICAL ECONOMY, The University of Chicago, Chicago, Ill.

Entered as second-class matter, January 16, 1893, at the Post-office at Chicago, Illinois, under the Act of March 3, 1879.

Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized on July 15, 1918.

THE JOURNAL
OF
POLITICAL ECONOMY

VOLUME 27 *November 1919* NUMBER 9

# INTENSIVE INDUSTRIAL TRAINING UNDER GOVERNMENT AUSPICES IN WAR TIME

With all our gigantic industry, machinery, specialization, and gospel of speed and output, we were, before the war, in many respects far behind other countries in our vocational educational system. In fact, we had, and have, no system, though the recently established Federal Board for Vocational Education, with federal grants which will soon amount to over $20,000,000 annually, has already stimulated the much-needed attention to industrial training on a systematized basis. Haphazard, sporadic, and ill-supported as was our industrial education before the war, we need not be surprised or unduly grieved if we find much confusion, delay, lack of system, and some ineffectiveness in our war-time intensive training.

The government agencies which gave or sponsored special industrial training for the war emergency included the Emergency Fleet Corporation, the Division of Military Aeronautics, the Engineers Corps, the Ordnance and Quartermaster's Corps, the Committee on Education and Special Training, and the Navy Department. In addition to these, the War Industries Board gave courses in employment management; the Training and Dilution Service of the Department of Labor and the Committee on Labor of the Council of National Defense encouraged the

establishment of factory training departments; and the Federal Board of Vocational Education co-operated in various ways with the Fleet Corporation and the War Department.

### THE EMERGENCY FLEET CORPORATION

It was immediately recognized, upon our entrance into the war, that the greatest difficulty in the way of speeding up war production would be encountered in shipbuilding, an industry which had been allowed to languish in this country, but which became overnight the strategic industry of the war. We had but a handful of well-equipped yards, few experienced managers, and an inadequate supply of skilled labor. In 1910, there were approximately 62,000 manual workers engaged in iron and steel shipbuilding. Of these, nearly 12,000 were laborers. It is safe to say that there were not 50,000 skilled steel-ship workers in the country in 1910. The census gives no figures for wood shipbuilding trades. In October, 1917, there were said to be only 15,000 men in wood shipyards. At that time there were between 50,000 and 60,000 men at work in steelyards for the Fleet Corporation. In October, 1918, estimates were made in the Fleet Corporation offices of the number of new men that would be required in 1919. One estimate, based on a projected output of 7,250,000 dead-weight tons, placed the need at 107,000 new men. Another, based on a program of 9,000,000 dead-weight tons, placed the requirements at 207,000 new men.

It is easy to see now that new yards were planned and constructed far in excess of the men available and far in advance of adequate provision for securing properly trained labor. The first definite step toward stabilizing the shipyard labor supply was taken by the Shipbuilding Labor Adjustment Board, which announced the definite policy of placing a premium on work in shipyards by paying a higher wage than workers were paid in similar trades in other industries. This differential, which the National War Labor Board and other government adjustment boards recognized as necessary, not only helped to keep the men from migrating to other industries, but attracted many men from other industries, and especially from the building trades. It is

probable that a very large percentage of the 11,400 structural iron workers enumerated in 1910 found their way into the shipyards. The exemption of shipbuilding workers from the draft, through the Draft Deferment Branch of the Fleet Corporation, was also a powerful instrument in securing and retaining workers. All of these measures combined, however, would have proved hopelessly inadequate to secure the 100,000 or 200,000 additional men necessary to carry out the projected production for 1919. Even had there been an unlimited supply of men offering to transfer from other industries to shipbuilding they could not effectively have been taken on as green men.

In the summer of 1917 the necessity for special training of war industry workers was recognized in a general way, but no government department or official had presented a definite plan. At this time Mr. E. E. MacNary, later in charge of intensive training for the Fleet Corporation, devised a plan, and the Fleet Corporation, through Admiral Bowles, took up the training question in August, 1917. Early in September an industrial training section was established. The first task was to convince at least a certain number of yards that special training would be a necessity. In the few yards which had real employment-service departments and in which the employment manager had vision, this was comparatively easy to do; but most of the yards were simply hiring and firing men, trying them out on the job, without trade testing, and without intelligent attempt to adjust them to the conditions of an industry new to them, and, under the pressure of war production, greatly deficient in foremen who could give adequate attention to the new men. Some eighteen or twenty yards were quickly brought to see the situation, however, and agreed to establish training departments under the general oversight and supervision of the Fleet Corporation.

*Instructor-training.*—The second problem was that of securing instructors for these yard training departments. The only men who could give the required rapid intensive instruction were the skilled workmen already on the job and familiar with the demands of the trade and the general shipyard environment. These men, however skilled and intelligent, could not be put to work at once

teaching others. A first-class workman may be utterly unable to teach other men. Production and instruction are two different processes, with different objects. Generally speaking, no workman can be expected to be an effective teacher, especially in highly specialized and intensive training, unless he has had some special normal training himself.

Instructor "training centers" were accordingly organized, as the first step in the program of intensive training. It was proposed that "selected skilled workers be given a brief training in organizing their trade knowledge for instruction purposes and in methods of giving instruction." It was not the purpose of the instructor-training center to teach a man anything about his trade, except in the case of "conversion" training mentioned below. He was supposed to know that thoroughly before coming. The object of instructor-training is to train a first-class man so that he can "put over" what he knows to others who do not know or who do not know as much about the trade as he does, and to do this instructing as rapidly and efficiently as possible.

Shipyards were asked to send their best men and only men who wished to become instructors in shipyard training departments. The men were to be paid regular wages and expenses while at the training center, and when they returned were to be put to work as instructors, provided they made good in the course. The Fleet Corporation considered the training of instructors so important that it offered to pay each yard sending men five dollars a day for each man successfully completing the course. This bonus was a partial offset of the expenses incurred by the yard, and it was a supposedly necessary incentive to get the yards to send men and to make them careful in the selection of the men.

The instructing staff of the training centers was composed of expert trade and vocational teachers, not shipyard men. Most of these instructors, in the earlier months at least, were men on leave of absence from various technical and vocational schools. What they lacked, to begin with, in knowledge of actual shipyard detail and technique they made up for by adaptability, initiative, resourcefulness, capacity to make job analyses, and, above all, insight into

the fact that their task was to teach already skilled men how to teach others.

The first instructor-training school was set up in a shipyard at Newport News, November 15, 1917, with fifteen instructors in charge of Mr. Charles R. Allen. Eighty-five men, representing fourteen different trades from yards in all parts of the country, attended the first sessions of this school. A second center was opened at Hog Island, February 27, 1918, and another at Chester, Pennsylvania, March 21, 1918. By this time the practicability of intensive training was demonstrated and the necessity for accelerated activity in the establishment of training departments in yards was recognized. The total number of instructor-training centers established was thirty-seven, twenty-one of which were in operation when the armistice was signed. By December 1, 1918, 1,086 men had finished the instructor-training, and on December 20, 65 men were still in training, making a total of 1,151.

To secure an adequate number of staff instructors for the instructor-training centers a staff-instructor-training school was established in Newark in June, 1918, and later moved to Philadelphia. No record of the number of men taking this training is at hand.

*Conversion training.*—Upon the establishment of the earlier instructor-training centers it was soon found that some of the yards did not have enough skilled mechanics who had the qualifications desired in the men to be sent to the centers. Moreover, the government's labor policy forbade anything in the nature of "scamping"—enticing men from one yard to another—and as a part of this general policy, yards were not permitted to take instructors or skilled men who would become instructors away from other yards. The three government fabricating yards, at Bristol, Newark Bay, and Hog Island, were manned very largely by workmen recruited from industries other than shipbuilding. In certain trades, like those of the machinists and coppersmiths, skilled workers could be taken into the yards and put on the job with very little special preparation. In others, some special training in shipbuilding processes was necessary. The high degree

of trade specialization made possible by modern production methods made practicable the "conversion" of a large number of men skilled in other industries into specialized workmen in shipbuilding. When the first instructor-training centers were opened a considerable number of such men were sent to be made into instructors for shipbuilding labor. Obviously these men had to have something beside a normal-school course. They had to have a certain amount of supplementary training to give them the necessary knowledge of shipbuilding work. The men who were sent to the instructor-training centers to take both the normal work and the supplementary training were spread out among the yards, accompanied by instructors, to work on the various jobs in which they needed experience. Some of the best instructors were drawn from these converted men.

Both at the instructor-training centers and in the yard training departments the method of training was intensely practical. It aimed to exclude all nonessentials. The instructor training was done almost entirely by discussion and practice, lectures being resorted to sparingly. Mr. Allen and his associates worked out a series of lesson sheets, later published in three pamphlets,[1] containing in simple form detailed suggestions and directions with regard to the tasks and functions of the shipyard instructor. At the beginning considerable skepticism had to be met. The men naturally doubted whether "a bunch of theorists" could teach them anything they did not already know, and the managers were doubtful as to the practicability of transforming workers into teachers in the short space of six weeks. The tact and ability with which the instructor-training was done, however, and especially the emphasis placed on the fact that the men were there merely to learn how to "put over" what they knew to other men, dispelled all doubt as to the practicability of the plan. The men quickly developed an interest in the work. They were first shown that effective intensive instruction is based upon (1) thorough and detailed job analysis—to determine what is to be taught—and

[1] *Emergency Training, Training Course for Shipyard Instructors:* No. 1, "Analysis and Classification of Trade Knowledge; Establishment of an Effective Instructional Order," pp. 54; No. 2, "Methods of Instruction," pp. 81; No. 3, "Instructional Management," pp. 135 (Emergency Fleet Corporation, Philadelphia, 1918).

(2) on an effective instructional order. Then came discussion, with insistence throughout on demonstration and practice on actual jobs as the best method. Following this came detailed directions as to the most effective organization and conduct of a training department. Part of the work consisted of practice teaching—the actual instructing of groups of workers in the yard.

*Yard training departments.*—The duties of yard training departments have incidentally been suggested above. In order for a training department to be eligible for approval, official notice had to be given to the Fleet Corporation that (1) the training department had been established, distinct from any other department, (2) a head appointed, (3) a staff of competent instructors definitely assigned to instruction work in their respective grades, and (4) that the relation between production departments and training departments was such that training could be given on production work, on the job.[1]

The men in training used actual production material in the shop or on the ways, not exercise material sent to some central place to be practiced on. The work was on actual production, and under actual production conditions, so that the men had to become accustomed to the distracting and uncomfortable circumstances often accompanying production. This was a cardinal point in the policy of the training section.

The exact number of yards which established intensive training departments is not known, but it was large. Up to December 1, 1918, seventy-five yards had sent men to the instructor-training centers. Most of these yards doubtless had training departments. No reliable statistics of the number of men trained in these departments exist. The following figures, based on such returns as were made up to November 14, 1918, show the trade distribution of over 16,000 men trained. At that date there were reported, in addition to 2,849 green workers in training: drillers and reamers, 2,875; bolters-up, 2,350; caulkers and clippers, 1,270; heaters, 2,511; holders-on, 2,302; riveters, 2,780; ship fitters, 880; erectors, 590; ship carpenters, 317; rivet passers, 105; tool repairers, 70; pipe fitters and plumbers, 59; electric welders, 52; shipwrights, 37;

[1] *Emergency Training*, No. 3, p. 10.

loftsmen, 34; acetylene workers, 25; outside machinists, 15; miscellaneous, 110; total, 16,396.

On December 1, 1918, the number of green men reported trained by the bonus[1] yards was 17,735, and the number in training 3,103. At this date, also, 998 men had been trained as instructors and 153 men were taking instructor-training; 230 instructors were trained for Hog Island alone. Basing the calculation on the average number of men an instructor handles in a yard training department, the Intensive Training Branch estimated a grand total of 31,974 men trained and in training in shipyards, December 1, 1918. Had the war pressure continued through 1919, it is safe to say that the intensive training departments could easily have trained 100,000 men.

*Supplementary training.*—Supplementary training, as distinguished from intensive training, was given to classes or groups, generally outside the yards, either in part-time schools or evening schools. In most cases it involved co-operation with existing agencies, such as public-school authorities, Y.M.C.A.'s, the Federal Board of Vocational Education, state councils of national defense, etc. The ideal of supplementary training was to fulfil certain aims not contemplated by intensive training: (1) to supply already skilled men with additional trade or technical knowledge to increase their efficiency;[2] (2) to provide opportunity for semiskilled workers to increase rapidly their technical knowledge and move into positions of greater usefulness and responsibility; (3) to meet the call of ambitious men new in shipyard work to know about shipbuilding and special branches; (4) to meet a reported shortage of technical men who must have engineering training.

[1] The Fleet Corporation not only agreed, as above noted, to pay a five-dollar-a-day bonus to men in training for instructorships, but also offered to pay one dollar a day to shipyards for each man they had in training in yard training departments. Half of this dollar went to the man, half to the company. The whole bonus scheme proved unsatisfactory and ineffective, but the only statistics available, for other than instructor training, come from the bonus yards.

[2] This form of training differs from conversion training in that the man remains at his old trade. It differs from all intensive training in that he is not taken off his job, save in some instances for an hour or two a day for two or three weeks, but gets the additional technical knowledge out of working hours while he is still doing full production work.

The essential idea underlying supplementary training was not that it would or could, in itself, be relied upon to make shipyard mechanics out of green men, but that a certain amount of desirable and even necessary auxiliary knowledge could be taught "off the job." Federal aid for supplementary training classes was available, under certain conditions, under the Smith-Hughes Act. By June, 1918, night-school classes had been organized in ten or a dozen places, with some 3,500 men enrolled. Instruction was up to that time, however, ineffective, largely for want of proper direction and preparation. The chief obstacles were the difficulty of getting proper instructors, the absence of well-organized courses and of knowledge of what was definitely to be accomplished, and in some cases the distance of the class meeting place from the yards. By November, 1918, many yards had employed instructors for supplementary work and were paying them on the same basis as instructors in the intensive training courses. In some cases arrangements were made with local school boards to pay the instructors. Where the boards were willing to pay enough to get the right kind of men this was found satisfactory.

On the whole the supplementary training probably did not accomplish any very definite results or aid materially in advancing ship production. The very multiplicity of agencies interested in it, and the consequent lack of co-ordination of effort and definition of functions militated against efficiency. Had the war continued, however, it is probable that the evening and part-time classes, under the more effective control and direction which almost certainly would have been developed, would have made an important contribution to the task of training shipyard workers. Until such effective central control was secured it would have been better to centralize attention on intensive training in yard training departments, where the men could be taught under actual production conditions.

*The attitude of organized labor.*—When the intensive training plan was under consideration the officials of the international unions concerned were consulted. It appears that out of consideration for war needs, but with some misgivings, they gave their informal approval. They naturally wished to be assured that

intensive training of green men would not be used as a leverage by which pre-war shipyard workers would be supplanted by new men after the war. The Fleet Corporation, while it entered into no formal contract with the unions as to the matter of training, was extremely careful to secure, so far as possible, their assent and co-operation. On September 29, 1917, for instance, Admiral Bowles, manager of the Construction Division, wrote to Mr. James O'Connell, president of the Metal Trades Section of the American Federation of Labor, as follows:

> The full co-operation of labor organizations is desired in securing . . . . as many skilled men as possible. We wish to have the help and counsel of the labor organizations in getting, when it becomes necessary, men from trades which they must supplement; and also in devising the best means of giving these men in the existing emergency, training for the patriotic work of building these ships. It is not possible, of course, to give them complete trade education in the limited time available. I apprehend that it would be fairer to all concerned to have them taught only necessary processes and allow them to return to their previous avocations, leaving the skilled tradesman to remain in their chosen industry at the close of the war.

Some time later Mr. Gompers brought up certain difficulties, chief of which was the danger of displacing skilled employees. By letter, Mr. Bloomfield, then head of the Industrial Service Department, promised to "steer clear of controversial matters." He also asked Mr. Gompers to suggest "a list of union officers to serve as an advisory committee for our plan of training," suggesting that this committee would be given official standing and that the Fleet Corporation would pay all of its traveling expenses. There is no record that such a committee was ever appointed. Whether such a formal arrangement would have worked well may be doubted.

In general it may be said that organized labor refrained from interfering, and even gave co-operation. But no formal agreements were entered into, although the matter was again contemplated at one time in the summer of 1918, and alternate forms of possible agreements were drawn up in the office of the Industrial Relations Division.

Some trouble was occasioned by the carpenters' organization, but it does not seem to have been serious. In the east, the boiler workers and coppersmiths at first opposed the intensive training

plan but later agreed to co-operate in setting up a school in Philadelphia. On the Pacific Coast, especially in the highly organized Seattle district, where the unions were far from tractable, the boiler workers took the position that it was their duty to protect their craft. In pursuance of this policy they would control recruiting. All requests for additional men would have to come through the union office, which would issue permits to experienced helpers to work temporarily as journeymen. When there were not enough helpers for this purpose, permits would be issued to other skilled mechanics, such permit to be surrendered at the will of the union.

This "permit system" was adopted by the Seattle Metal Trades Council and tacitly recognized by the Fleet Corporation.[1] This arrangement practically threw the regulation of training into the hands of the unions, where, indeed, under their strict regulations as to apprentices and helpers, it had been before the war.

*Foremanship courses.*—One of the sorest points in war-time shipbuilding organization was the foreman, largely because he was often unable to accommodate himself to the new conditions, resented the intrusion of the new employment service departments upon his authority, and in general showed frequently an incapacity to understand the necessity for modifications of established methods of handling men and materials. Moreover, there was a great dearth of skilled and experienced foremen and leading men. When the war opened there were less than 4,000 men who by any stretch of the imagination could be called ship foremen.

In September, 1918, the Fleet Corporation made an experimental arrangement with an industrial management expert to conduct a series of thirteen conferences for foremen in certain yards. The teaching in these courses—which were later given, at

[1]The Metal Trades Council adopted, among other rules, the following: "Mechanics and other helpers shall be hired through the respective organizations; provided, however, that in cases of emergency, the company may hire direct and shall furnish a list of names and the class of work of those employed to the business office of the organization having jurisdiction over them within twenty-four hours after employment." (From the *Proceedings* of the Conference between shipbuilders and employees of the Pacific Coast and the Emergency Fleet Corporation, Philadelphia, August 5 to 10, 1918.)

a cost of $500 each, in a number of yards—centered upon certain common-sense rules, about as follows: (1) make and use correctly necessary reliable records and information, (2) plan and schedule accurately for men, material, and equipment, (3) dispatch, plan, and schedule, (4) standardize working conditions, (5) find out and follow the best practice, (6) issue standard instructions, (7) cooperate, (8) manage intelligently and justly, (9) assign and handle men properly, (10) organize rightly, (11) reward promptly, justly, and liberally. The conferences were conducted mainly by the lecture method. There was rarely follow-up work, and no opportunity to see that the principles set forth were applied under actual production conditions in the yard. While the foreman conference work was doubtless superficial and hurried, it apparently did serve a useful purpose. As one high official said, however, the fact that the yards needed such elementary common-sense material was one of the saddest commentaries on the efficiency of industrial management in this country. Aside from the courses just mentioned, foreman-training courses of a somewhat different nature were conducted in four yards by the Intensive Training Branch itself. Both series of courses were superior to the ordinary shop meeting of foremen. They provided a definite program aimed at definite objectives. The importance attached to foreman-training is indicated by the fact that the Fleet Corporation was willing to contemplate an expenditure of between $25,000 and $50,000 for it.

*Technical Training Branch.*—Another educational activity of the Fleet Corporation was an effort to enlist the services of trained technical graduates, and to interest college men in the shipbuilding program. During 1918, Mr. F. P. McKibben, in charge of this work, delivered over one hundred lectures at forty-three colleges, reaching about twenty-five thousand men, of whom nine hundred secured service with shipbuilding companies, either permanently or during the summer. A small employment bureau was maintained for placing these technically trained men, most of whom were from engineering departments. A short course in naval architecture was given during 1918 in ten different colleges and universities.

*Electric Welding Branch.*—Substitution of electric welding for riveting in shipbuilding, if practicable on all parts and on large ships, would result in an enormous saving of time and labor cost—a saving estimated as high as three-fourths. As a speeding-up method, electric welding appealed to the Fleet Corporation, and an Electric Welding Branch was set up. It established training centers for welders—the one instance in which the Emergency Fleet Corporation did trade training itself. Approximately one hundred and fifty men were trained in the new process.

## THE ARMY

The modern army is a huge industrial, as well as military, organization. It is composed not only of soldiers but of workers skilled in a great variety of trades. A large percentage of its members have to be highly skilled and specialized mechanics. Moreover, the army often requires new combinations of parts of the standardized trades of civil life. Certain corps, like the Air Service, require specialized mechanical skill not found in civil life. It follows that the building of an army necessarily involves an enormous amount of industrial trade training of a highly specialized and intensive nature.

The records of the personnel officers of the National Army showed that less than 10 per cent of the men had had a high-school education or better, that the great majority had had no special training of high degree, and that most of the men lacked skill or even continuity of experience.[1] The educational problems confronting the army authorities were so complicated and difficult that the War Department never secured a well-organized and co-ordinated system of trade training. It was not until the early spring of 1918, nearly a year after we declared war, that intensive trade training schools for the army began to be established. Certain army corps set up such schools at training camps, arranged for short courses at factories, and made contracts with educational institutions, by which the institutions furnished barracks, meals, instruction rooms, etc., at a stated per diem rate per man. The

[1] C. R. Dooley, "Intensive Training," a paper read before the American Society of Mechanical Engineers, December, 1918.

Signal Corps, for instance, made such contracts and was one of the first to get its special training under way. A number of the schools so established continued to operate till the end of the war.[1]

After the Committee on Education and Special Training was established (February 8, 1918) and got its schools into operation, various other army departments secured their specially trained mechanics through it. There was henceforth a dual, or multiple, organization of training, with resulting lost motion.

Certain corps never established any serious trade training. This is true of the *Motor Transport* and the *Tank Corps*, and, in the Navy Department, the *Marines*. The Marines had no trade training whatever. The Tank Corps had little trade training, because it did not need much. The organization of the Tank Corps was begun in March, 1918, but the entire period up to the armistice was devoted to tank training for combat. The Motor Transport Corps was established in August, 1918. A training service was formed but never reached a stage where it functioned well.

The *Engineering Corps* had great difficulty in getting properly qualified men. Neither from the draft boards nor through the Committee on Classification of Personnel and the Committee on Education and Special Training did the corps secure men whom it regarded as satisfactory. The most satisfactory source of recruits for engineer training would have been the railroads, but this source was closed by the Railroad Administration on the very obvious ground that the men were indispensable to a basically essential industry. The railroad brotherhoods are also said to have objected to the utilization of the railroads as a training ground for army engineers. The corps got a handful of men trained at three railroad schools under the Committee on Education and Special Training. It finally decided to train its own men. A training school for a few trades was planned at Camp Humphreys in March, 1918, with the ultimate intention of training all mechanics

[1] For instance, a school for radio-mechanics was established by the Signal Corps March 30, 1918, at the University of Texas. Later this school was converted into a radio-operators' school and the University, entering into a new contract with the Air Service, erected buildings at Penn Field at a cost of $540,000. By January, 1919, 1,711 students had been trained at this one school. It never had any connection with the Committee on Education and Special Training.

except railroad men, but practically it never got started. Difficulties with union labor delayed the construction of the necessary plant, and with the acceleration of the rate at which men were sent across in the summer months it became necessary to let them go with very inadequate training, to learn what they could in France. Engineering officials felt that organized labor put obstacles in the way of intensive training. It is quite possible that this was so; it is possible, also, that the situation was not handled as tactfully and fairly as it was in the shipping industry, where union opposition did not become serious.

In the *Military Aeronautics* Division, a Mechanical Instruction Branch was established to train men to do repair work, etc., in the aviation service. Although the files of the Air Division show that a great deal of consideration was given to the possible necessity of giving enlisted men special mechanical training, it was not until October, 1917, that actual steps in that direction were taken. The policy at first adopted was to requisition men from Kelly Field and send them to aircraft factories. In November it was decided to establish mechanics' schools at some five aviation fields. Motor transport work was also established at five northern schools. By December intensive mechanical training was going on in twelve factories, and steps had been taken to draft curricula and standardize instruction. Plans for starting a big school at Kelly Field were delayed, but the commanding officer there established a mechanics school or training department to give such instruction as limited time and equipment made possible. In March, 1918, an instructor-training course was given at Kelly Field, and the reorganized school began operation. By April, equipment was secured and 1,000 men were taking courses with great success.

In December, 1917, it was decided to send some men to Dunwoody Institute, St. Paul, and the work there constantly expanded, although there was some delay in getting men to train. Schools were also started elsewhere, but in April all the training in factories and in all schools except Kelly Field, Dunwoody, David Rankin (St. Louis), Pratt Institute, and Carnegie Institute was discontinued, and the work centralized at Kelly Field and St. Paul. Kelly Field gave training in six trades, St. Paul in

fifteen. Altogether, training was given in sixteen trades. At first the training period was only three weeks in length, but it was gradually lengthened to three months.

When the schools were first started, enlisted men were obtained for training by the usual operation of the draft boards, but it was soon found that men of a sufficiently high type were not being sent. Late in the spring of 1918, the Mechanical Instruction Branch therefore established its own trade-test boards who were given authority to induct men and sent to various cities throughout the country. Recruits, secured through advertising and other publicity, were carefully trade-tested, and only good men were accepted for training. Some men were received from the special schools under the Committee on Education and Special Training, but they were not always satisfactory, partly because they had not been properly trade-tested, partly because their training had not been standardized.

The source of instructors at first was a nucleus of officers and enlisted men who had been carefully trained and certain civilians. As the schools progressed, however, the training of instructors was started, with the result that by the end of the year practically all of the instructors were officers and enlisted men who had received special instructor-training.

Up to December 30, 1918, a total of 14,433 mechanics had been trained. These were divided as follows: airplane mechanicians, 4,820; motor mechanics, 3,587; chauffeurs, 2,945; welders, 706; magneto-repair men, 499; motorcyclists, 329; fabric workers, 254; carpenters, 248; electricians, 192; propeller makers, 174; vulcanizers, 156; instrument repair men, 142; coppersmiths, 130; metal workers, 94; blacksmiths, 85; cabinet makers, 72. This branch was undoubtedly one of the best managed and most successful in all the field of special industrial training in the war time.

It was apparently with the idea of bringing order into a chaotic training program that the *Committee on Education and Special Training* was established. Its task was a difficult one, and it did not get to the actual establishment of its own schools until

late in the spring of 1918. The Committee consisted of three members, representing respectively the General Staff, the Provost Marshall General's Department, and the Adjutant General's Department. Mr. C. R. Dooley was made educational director. An Advisory Board of six civilian members, with Professor James R. Angell, as chairman, was also appointed. Later, in the autumn, the newly instituted Student Army Training Corps was put under the Committee's direction, and a "Vocational Section" was formed. Mr. Dooley was appointed director of vocational training. The functions and fortunes of the ill-starred S.A.T.C. need not here be discussed. The industrial training work under the Committee was practically confined to the Vocational Training Section.

The utilization of college and university facilities for intensive industrial training of soldiers was admittedly an experimental undertaking. Six months, April 15 to November 15, 1918, were allowed for the experiment, and 90,000 men were assigned for training within that limit of time. The committee instituted, in all, something over one hundred and forty special training schools, for the most part in established universities and colleges. The state universities, as a rule, trained the largest numbers of men. Certain private schools secured large contracts for training in specific trades, especially automobile mechanics. In a few instances chambers of commerce or other local bodies were allowed to organize special training schools.

Contracts were let for the training of 143,508 men to November 1, 1918. After November 1, 223,678 men were to have been trained, had the war continued. When the training work closed, at the time of the armistice, 90,116 men had been trained and delivered to the various army corps, and 38,741 men were in training, making a total of 128,857. The deficiency of 14,651 between this total and the contract figure, 143,508, is attributed largely to a shortage of men in October, and to delays occasioned by the epidemic of influenza. The number of men trained, and number of men whose training was intended to take place after November 1, 1918, by trades, are shown in the table on page 742.

| Trade | Training Completed by November 1 | To Be Trained after November 1 | Total |
|---|---|---|---|
| Airplane mechanics | ..... | 400 | 400 |
| Auto drivers | 12,350 | 7,055 | 19,405 |
| Auto mechanics | 53,007 | 52,610 | 105,617 |
| Auto-truck drivers, heavy | 920 | 33,300 | 34,220 |
| Band musicians | 100 | ..... | 100 |
| Bench woodwork | 4,179 | ..... | 4,179 |
| Blacksmiths | 5,427 | 3,841 | 9,268 |
| Box making | 20 | ..... | 20 |
| Carpenters | 8,751 | 4,280 | 13,031 |
| Car repairers | 145 | 595 | 740 |
| Chauffeurs | 1,470 | 8,280 | 9,750 |
| Clerks and stenographers | 80 | 180 | 260 |
| Cobblers | 40 | 60 | 100 |
| Company mechanics | ..... | 1,600 | 1,600 |
| Concrete foremen | 1,968 | 640 | 2,608 |
| Construction foremen | 50 | 75 | 125 |
| Cooks | 20 | ..... | 20 |
| Draftsmen, general | 380 | 1,160 | 1,540 |
| Draftsmen, topographical | 850 | 3,300 | 4,150 |
| Electricians | 7,370 | 3,692 | 11,062 |
| Explosives | 20 | ..... | 20 |
| Farriers | 120 | 840 | 960 |
| Field signal battalion officers | 300 | 600 | 900 |
| Foundrymen | 125 | 410 | 535 |
| Gas-engine men | 3,293 | 720 | 4,013 |
| Gunsmiths | 2,060 | 2,635 | 4,695 |
| Highway-construction men | 75 | ..... | 75 |
| Horseshoers | 425 | 665 | 1,090 |
| Ignition workers | 30 | 170 | 200 |
| Instrument-repair men | 1,255 | 1,152 | 2,407 |
| Leather workers | 15 | 45 | 60 |
| Lens grinders | 80 | 60 | 140 |
| Locomotive engineers | 250 | 270 | 520 |
| Locomotive machinists | 50 | 60 | 110 |
| Locomotive-repair men | 60 | ..... | 60 |
| Machinists | 5,006 | 4,261 | 9,267 |
| Mechanics, battery | ..... | 600 | 600 |
| Mechanics, general | 2,827 | 3,460 | 6,287 |
| Mechanics, wagoners | 300 | 960 | 1,260 |
| Meteorologists | ..... | 450 | 450 |
| Mine-drill runners | 910 | 1,120 | 2,030 |
| Motorcycle repair men | 720 | 4,640 | 5,360 |
| Motorcyclists | 40 | 3,500 | 3,540 |
| Multiplex telegraphers | 300 | 600 | 900 |
| Pattern makers | 110 | ..... | 110 |
| Pipe fitters and plumbers | 626 | 1,310 | 1,936 |
| Process printers | ..... | 160 | 160 |
| Propeller makers | 140 | 420 | 560 |
| Radio-electricians | 2,455 | 10,720 | 13,175 |
| Radio-operators | 12,243 | 20,080 | 32,323 |
| Railroad trackmen | 65 | 195 | 260 |
| Rubber workers (vulcanizers) | 721 | 1,055 | 1,776 |
| Sheet-metal workers | 2,433 | 2,172 | 4,605 |
| Surveyors | 825 | 3,170 | 3,995 |

| Trade | Training Completed by November 1 | To Be Trained after November 1 | Total |
|---|---|---|---|
| Teachers' training course | ..... | 1,200 | 1,200 |
| Telegraphers | 1,385 | 360 | 1,745 |
| Telephone electricians | 2,430 | 8,825 | 11,255 |
| Telephone linemen | 170 | 1,250 | 1,420 |
| Telephone-repair men | 175 | 450 | 625 |
| Topographical computers | 30 | 90 | 120 |
| Trackmen | 50 | ..... | 50 |
| Tractor operators | 1,810 | 2,530 | 4,340 |
| Truck drivers | 6,910 | 18,695 | 25,605 |
| Truckmasters | 150 | 3,600 | 3,750 |
| Welders, gas | 276 | 435 | 711 |
| Wheelwrights | 145 | 625 | 770 |
| | 148,537 | 225,628 | 374,165 |

The *Committee on Classification of Personnel* was established in the Adjutant General's Department in August, 1917, six months before the formation of the Committee on Education and Special Training.[1] The Classification Committee, later transferred to the General Staff, did excellent work, and in time there was some co-operation between it and the Education Committee. But the relation between the two was apparently never well defined and it is difficult to say just what it was at any particular time. Proper organization would have involved the trade testing of candidates for the special training schools by the Classification Committee's personnel officers, attached either to the draft boards or to the depot brigades and general training camps. This would have insured to each school a supply of men adopted, in mental capacity

[1] The very interesting work and the highly important functions of the Committee on Classification of Personnel cannot be covered in this article. Mention should be made, however, of the personnel schools conducted under the supervision of the committee, to furnish an adequate supply of personnel officers for the army. The first of these schools was held at Camp Meigs, April 25 to May 4, 1918. It had a decided effect upon personnel work all through the army, although only 93 men were in attendance. Between May and September, 1918, nine other schools were held at various camps. In September an eleventh school was established at Camp Sherman, with the definite purpose of drawing a select group of men into personnel work. Later still other schools on similar lines were provided for. The total attendance at fifteen personnel schools was 1,560. This included the attendance at a trade-test school held at Newark. The work of the personnel schools will be described in detail in a forthcoming report by Lieutenant Colonel Edward K. Strong, Jr.

and by experience, to intensive trade training in particular lines. The actual procedure was otherwise. Men were allowed to volunteer, and where enough did not do so men were ordered either directly upon their induction into the service, or from the recruit depots, to report to the schools, with no tests, either trade or mental.

The schools under the Education Committee unquestionably accomplished a difficult task remarkably well. The organization of one hundred and forty schools, the devising of courses and the training of 90,000 men in half a year are in themselves a monument to American resourcefulness. There was, nevertheless, inadequate organization and in consequence much lost motion. Generally speaking, a committee may be better than a single head for determining policies, but for administrative purposes, where definite fixation of responsibility is necessary, a committee is likely to be ineffective, if not positively obstructive. The Education Committee should have settled upon well-defined policies once for all and as quickly as possible; the administration of these policies should have been left without question to one man with full authority. This would have obviated the complaint that the committee did not know its own mind and that it gave conflicting orders to the various army corps making requisition for trained mechanics. The complaint that instruction in the committee schools was not standardized was well founded, but the lack of standardization was due partly to the great complexity of the task, and partly to the Committee's inadequate administrative control over its one hundred and forty schools, scattered as they were in all parts of the country in institutions of very diverse character. It appears that some of the schools, at least, did not use the course material prepared by the Committee, but developed their own schemes of instruction. With the pressure of speed and numbers it was deemed impractical in some places to follow out the Committee's theory of a scientific instructural order, and the training was made even more specialized and intensive than the Washington authorities contemplated. The presence of unselected bodies of recruits in the schools made an opportunist policy necessary. The subject-matter of instruction was governed further by the capacity of the men under training,

and by that of the instructors who at the time happened to be available in the school. It was inevitable under such conditions that the instruction of the 90,000 men in a great variety of trades should not approach ideal standardization.

Theoretically, the method of instruction was supposed to be strictly inductive. With a carefully prepared list of questions on the "job sheet" in his hand, the student was supposed to find out for himself by actual work with his machine, or material, the correct answers. Instructors were to be regarded not so much as a source of information as a court of last appeal to settle discussions and rectify mistakes.[1] As in the intensive training under the Fleet Corporation, the lecture method of instruction was discouraged, but in actual practice many of the schools resorted to it, not finding it feasible to apply the purely inductive method contemplated by the Committee.

In the matter of securing properly qualified instructors the schools may be said to have lacked definite policy, and the Committee did not take adequate measures to establish instructor-training centers. As a result of this failure, the schools had to obtain their instructors as best they might. Some of them established impromptu instructor courses. In many cases, however, men drawn from trades in civil life were set to instructing without any preliminary normal training to fit them for their new task. Another source of instructor material was found in the more able men intensively trained in the schools themselves. Army regulations permitted the schools to retain superior men for a period of two months after completion of the prescribed training period. Where men were secured from civil life as instructors and put through some preliminary training, they were first given a general survey of the work in the schools, then brought down to a specialty, and finally put to work teaching some special part of a specialty under the supervision and advice of an older instructor.

*Army supply service courses.*—Soon after its organization there was formed in the National Council of Defense a Committee on Storage Facilities to plan and advise with regard to the movement and warehousing of munitions and supplies. In May, 1917, the

[1] C. R. Dooley, *op. cit.*, p. 9.

services of this Committee were requisitioned by various war departments for the securing of specially trained personnel for service in the different branches. Upon the Committee's suggestion and in some cases under its direction, special eight-week courses were established in fifteen colleges and universities to train men intensively in stores work. For the most part the men selected for training were college graduates. No record is at hand of the total number of men trained, but it is supposed to be between two and three thousand.[1] As the several staff corps of the army developed their own training facilities, these courses were discontinued. The work of the Storage Committee was in large part taken over by the Quartermaster's Corps and the Ordnance Department, and thereafter the courses were under the direction of the latter. Much delay and confusion were occasioned by the indefinite nature of the control and by the fact that the army authorities did not know exactly what they wanted the courses to accomplish.

To meet the need for systematizing and standardizing of instructional material, the School of Commerce and Administration at the University of Chicago collected all the available material bearing on army supply work and organized it into a detailed and systematic outline for the course.[2] Some of the schools attempted to plunge at once into specific details of storage work, but the Chicago courses, and some at other places, proceeded upon the belief that the best service could be rendered by presenting a general outline of the basic principles of supply work, with only such use of details as would be helpful in showing how principles are applied.[3] Besides these courses at the universities, the Quartermaster's Corps conducted schools of its own, notably one at Jacksonville, Florida, and one at the Philadelphia Depot. The Ordnance

[1] Council of National Defense, *Second Annual Report* (1918), p. 186. The institutions giving the courses included the University of Chicago, Pennsylvania, Northwestern, Michigan, Harvard, California, Oregon, Pennsylvania State, Illinois, and Wisconsin.

[2] *Quartermaster and Ordnance Supply, a Guide to the Principles of the Supply Service of the United States Army*, by Instructors of the Army Supply Service Course. University of Chicago Press, 1917. Pp. 198.

[3] *Ibid.*, Preface by L. C. Marshall.

Department contemplated the establishment of a training section, but when the work of the Committee on Education and Special Training was instituted the plan was given up.

### THE NAVY

"The educational policy of the navy," says Secretary Daniels, "can be stated in few words. It is a policy based not on theory but on the demands of an age that can hardly be misinterpreted. The seamenship of the future is dependent on the increasing utilization of the data of science."[1] To this policy may doubtless be attributed in some part the fact that when we entered the war the navy was prepared. The existence of a large number of trade schools and courses already in operation in the various navy yards made it comparatively easy for the Navy Department, through its Bureau of Navigation, to expand its training facilities promptly, in an easy and systematic manner. At the close of the war the navy had about one hundred and eighty schools for special training in various lines. This number included sixteen officer-material schools, and a large number of others of a purely military nature, but seventy-eight of the one hundred and eighty, including fifteen quartermaster schools, may fairly be classified as trade schools, or at least as schools which gave training of an industrial nature and value. If the quartermaster schools be omitted, as of doubtful trade value, the number of industrial schools is sixty-three. The work in the navy requires a much larger percentage of trained, and of highly specialized, mechanics than does that of the army, since the modern ship, whether eagle boat or floating fortress, cannot be operated without men who are thoroughly at home with complicated machinery. A battleship has to have, for instance, thirty skilled machinists and thirty electricians.

The distribution by trades and the number of men which the seventy-eight schools could have in training at any one time are given in the following table:

| | |
|---|---|
| 2 blacksmiths schools (1 for aviation) . . . . . | 25 |
| 1 camera repair men school . . . . . | 10 |
| 6 carpenter's mate schools (5 for aviation) . . . | 560 |

[1] *Annual Report* (1918), p. 73.

| | | |
|---|---|---|
| 14 | commissary schools (cooks, bakers, stewards, etc.) | 1,390 |
| 3 | coppersmiths schools (1 for sheet metal work on aeroplanes) | 55 |
| 3 | diving schools | 125 |
| 2 | electrical schools | 1,290 |
| 1 | marine engineman school | 100 |
| 6 | fireman schools | 560 |
| 9 | gas-engine schools | 580 |
| 2 | gyro-compass schools | 90 |
| 1 | instrument-makers school | 3 |
| 1 | liberty-engine school (advanced course for graduates of Columbia advanced aeroplane motor school) | 40 |
| 4 | machinist's mates schools (3 for aviation) | 2,160 |
| 1 | molders school | .. |
| 1 | optical repair men school | 20 |
| 1 | oxyacetyline welding school | 50 |
| 1 | painters school | 10 |
| 1 | pattern-makers school | .. |
| 15 | quartermasters schools (5 for aviation) | 1,920 |
| 2 | shipfitters schools | 20 |
| 1 | steam engineers school | 70 |
| 78 | | 9,075 |

No record is available of the total number of men trained in these schools. The length of the training period varied from fifty hours to twelve months. Most of the periods were between six weeks and three months in length.[1]

At Stevens Institute, Hoboken, New Jersey, an intensive-training course for marine engineers was established in July, 1918, and is still in operation. It was prepared to graduate six hundred steam engineer officers each month. The course was of four months' duration, including a month of preliminary training in boilers, engines, and auxiliaries at the Institute, two months' practical work on coastwise ships and in repair plants, and a final month at the Institute in training for officers' duties. Only men who had completed a high-school course and were graduates of an engineering course at a recognized technical school, or had equivalent training, were accepted.[2]

[1] Data concerning special training schools, submitted by the Bureau of Navigation, Navy Department.

[2] Deck and engineer officers for the merchant-type ships were trained by the United States Shipping Board, and by an officer-material school at the naval training

OTHER GOVERNMENT AGENCIES

*Council of National Defense, Section on Industrial Training for the War Emergency.*—Among the early activities of the Committee on Labor, in the Council of National Defense, was the organization of a section to promote intensive training of highly skilled workers through encouraging the establishment of vestibule schools and other appropriate means. The Section was composed one-third of labor representatives, one-third of employers, and one-third of practical educators. State committees similarly organized were developed in nine states in which war production was heavily centralized. Under the Section's general advice, sixty-five vestibule schools, all "on a production basis at all times with speed and accuracy as the watchword," were established, chiefly in plants manufacturing aeroplanes, heavy ordnance, small arms, and other essential war material. These schools are said to have yielded a 10 to 40 per cent increase in productive efficiency, for both men and women, and to have been instrumental in reducing the labor turnover materially. The activities of the Section appear to have been somewhat varied and not rigorously defined. As an advisory and stimulative body, it did excellent work, at a time when production conditions were chaotic and the need of a directing hand in training policy pronounced.[1]

*The Training Service of the United States Department of Labor.*—As in many other lines of endeavor, as the war wore on, the training functions of the Council of National Defense were transferred to other government agencies. On July 1, 1918, Congress appropriated $2,335,000 for war-emergency services in the Department of Labor. One of these was the Training and Dilution Service,[2] which got under way in August with an appropriation of $150,000,

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camp, Pelham Bay Park, New York City, with adjuncts in Chicago and Cleveland. In July, 1918, the Pelham Bay school was graduating deck officers at the rate of 200 to 250 a month. Among the chief agencies for the training of seamen and firemen, and to some extent petty officers and specialists, were the four regular naval training stations which existed prior to the war. Their capacity was increased from 6,000 to 75,000 recruits, and just prior to the armistice, steps had been taken to increase the capacity of the schools to 100,000.

[1] For a description of the work of the Section see the *Second Annual Report of the Council of National Defense* (1918), pp. 85–89.

[2] The term "dilution" was dropped from the name at the close of the war.

and which took over, in large measure, the work of the Industrial Training Section of the Council. The functions of this Service were, and are, purely advisory and educational. It conducts no training on its own account. By December it had in the field eighteen production engineers, who visited plants, made surveys of production methods, and advised managers with regard to the installation and conduct of factory-training departments of vestibule schools.

In its advisory work the Service has kept in mind three principles, similar to those underlying the Emergency Fleet Corporation intensive training: (1) training departments should work on actual production; (2) they should be subject to full factory inspection and their work should conform to normal factory standards; (3) machinery and material should be of same kind and type as that used in production departments.

The field experts apparently found, in a great many instances, very low standards of productivity and poor organization, leading to high labor turnover and subnormal output per employee. Five prerequisities of efficient production were formulated and kept in mind in surveying and advising. These were: (1) trade training of employees, (2) proper equipment, (3) prompt supply of material to the workers, (4) adequate and continuous power, (5) absence of purposeful limitation of output. The Service is inclined to think that limitation of output ("slacking") is the least of the obstacles to productive efficiency, while inadequate training and poor routing of material are the greatest.[1]

*Employment-management courses.*—Although they do not represent industrial training, strictly speaking, their connection with it is so intimate that some mention should be made of the intensive courses in employment management given under the auspices of the Employment Management Branch of the War Industries Board, in co-operation with various interested government departments and agencies. These courses were an outgrowth in part of the army-supply service courses started by the Storage Committee

[1] Cf. C. T. Clayton, "Training Labor: A Necessary Reconstruction Policy," *Annals of the American Academy of Political and Social Science* (January, 1919), pp. 137–43.

of the Council of National Defense and in part of the widespread recognition of the fact that war production was being much hampered and delayed by the absence or inefficiency of employment-service departments in many establishments. This was particularly the case in shipbuilding.

Employment experts were secured as instructors, and intensive courses, six weeks to two months in length, were established at points where universities could co-operate. These places included Boston, New York, Rochester, Pittsburgh, Seattle, Berkeley, Cincinnati, and Cleveland. At Cleveland a special course for women was conducted. About thirty women, coming from various walks of life, took the work. Later a similar course for women was given in Chicago.

In general only persons with some industrial experience were accepted for instruction. Employers were invited to send men or women of their own choosing, subject to the approval of the Branch. Such candidates were to return to their sponsors and be utilized by them in employment work. To employers who had no representatives to send the Branch offered its services to suggest persons of satisfactory ability and experience. Unattached students were also accepted in limited numbers, to constitute a reserve for satisfying the demand from government departments and private employers.[1]

Up to January 1, 1919, about 450 persons, most of whom had been sent by their employers, had gone through the courses. The Employment Management Branch of the Emergency Fleet Corporation did excellent service in stimulating improvement in methods of employing men.

*The Federal Board of Vocational Education* was organized in 1917 under the Smith-Hughes Act (approved February 23, 1917) for the promotion of vocational education. It naturally offered its services in the co-operative upbuilding of special industrial training for war purposes. It was estimated that by October, 1917, 200,000 mechanics in excess of those obtainable through the draft, enlistment, and induction would be needed in the army of 1,500,000

[1] *War Emergency Courses in Employment Management* (Washington: War Industries Board, 1918), p. 5.

then projected. The Board came to the conclusion that a large number of drafted men could be given training in evening classes before they were actually called to the colors. After consultation with War Department officials the Board entered upon an active propaganda to develop evening classes for drafted men with a background of previous experience and the necessary ability. These classes had, under the law, to be organized through and under the state departments of vocational education. Up to November 13, 1918, the Board had promoted the training of 19,694 radio-operators, and in evening schools under state departments of vocational education had given training to 16,060 men in various mechanical trades.[1]

As the projected army increased in size, and it became apparent that the demand for mechanics both in the army and in industry would be far in excess of the supply, the Board, in January, 1918, proposed to the Secretary of War a comprehensive scheme for industrial training of army mechanics, under a special army training board. The appointment of the Committee on Education and Special Training followed, and in March the Federal Board "withdrew all its proposals for administrative relations with the committee." This action was occasioned in part by the fact that the Board was hampered by law and could not enter into contractual or administrative relations with schools and colleges not working under the Smith-Hughes Act. The vice-chairman of the Board continued to act as a member of the Advisory Board of the Education Committee.

The Federal Board prepared and circulated, to the number of 200,000 copies, nine bulletins containing detailed suggestions for emergency courses. It also continued its efforts to secure the training of men in evening classes. In this it co-operated with the Supplementary Training Branch of the Emergency Fleet Corporation. It also assisted the Committee on Classification in the preparation of trade tests and a classification system.

It may be doubted whether the kind of training which could be given in evening and part-time schools, even under the necessarily somewhat indirect supervision of the Federal Board, was

[1] *Second Annual Report of the Board* (1918), pp. 27–37.

likely to meet the needs of effective war-time intensive training. Certain supplementary knowledge, like elementary blue-print reading, can doubtless be imparted to men already familiar with a trade. But definite and intensive trade training along narrow but carefully directed lines was the great need of the army and of industry during the war. This training, to be given at the best advantage, had to be on the job, amid job conditions, and with the actual material and appliances of the job. The successful factory schools were operated in some such way. Vestibule schools used the same machinery and held their learners up to shop standards. All this is impossible, or at least under present conditions impracticable, in night-school work of the ordinary type.

It is perhaps fair to say, therefore, that while the Federal Board did excellent co-operative war service, it was not in position to further the needful narrow intensive training such as was provided by the Fleet Corporation, certain army corps, and the better schools under the Committee on Education and Special Training.

## CONCLUSION

This survey of emergency industrial training under government agencies might close at this point and the reader be left free to derive his own inferences with regard to possible lessons bearing on industrial education in peace time. It would be dangerous to draw from war experience definite conclusions for the guidance of educational policy under normal conditions. Yet a few suggestions should perhaps not be allowed to pass entirely unnoticed.

The first question which presents itself has to do with the merits of intensive training versus apprenticeship. A detailed investigation of the actual product and results of war-time training would probably throw considerable light on this problem. Whatever might be the best from a broad social standpoint, there can be little doubt as to where cost-reducing production for pecuniary profit tends. Yet specialization may easily go so far as to defeat its own end, even from the viewpoint of profits. However much automatic machinery may be introduced, however minute the specialization of occupation may be made, industry will always need a large number of educated, experienced, and intelligent

mechanics who "know what to do next." There is much weight in the trade-union argument that industry would dig a pitfall for itself should it not provide scope and training for skilled all-around mechanics without whom specialized production itself cannot long be maintained. With all the emphasis, moreover, which is now being given to the instinct of workmanship, etc., it is quite possible that production engineers as well as employment departments will swing around partly to the trade-union view.

Anyone who has read the training and dilution bulletins of the British Ministry of Munitions must have been impressed with the striking instances where totally inexperienced women, after a few weeks in a training bay or vestibule school, have been able to produce an output greatly above that of the skilled engineers whose places they took. We read, too, of the "precision" work these women were able to do—work requiring accuracy to .0004 of an inch—and of women who in a comparatively short time became adept at setting and grinding tools and operating non-automatic machinery. So far as accuracy and intelligence are concerned, there is nothing in English or our own experience with newly trained women workers that need surprise us. No one not blinded by masculine complacence has ever supposed that women, if given incentive and opportunity, could not develop mechanical sense and skill. But it is necessary to remember that English manufacturing methods have never been so highly specialized and automatized as American, and that "dilution" in England meant not that a woman took a man's place but that several women did—the work the man had performed being split up into several simplified tasks, for which brief training, minute supervision, and specialized machinery would suffice. When the English unions consented to dilution and to the suspension of union rules, they were making, therefore, a much greater sacrifice and running a much greater risk than were the unions in America, where industry had already been so highly specialized that specialization could not be carried much farther. And that is one reason why today English labor is opposed to the "Americanization" of English industry. From the standpoint of the worker, having regard either to the wage scale or to interest in work, it is difficult not to think that serious extension of the minute

specialization which is the concomitant of intensive training might prove detrimental, if not disastrous. The dangers of dilution are not so great in this county as in England, but they are by no means negligible.

It is not to be denied, however, that experience with intensive training both here and abroad does suggest that in the future the trade-union policy of long apprenticeship, in certain callings at least, must rest on other grounds than the argument that a man cannot learn the trade in less than three or five years. Too many cases are on record where men have learned to do work up to production standards both in quality and quantity in a few weeks or months. A man cannot become a skilled plumber or a coppersmith, capable of operating all kinds of work, save by a long period of training; but it is probable that the average workman can learn all that he need know about riveting ships in the space of a very few months. Inasmuch, also, as the greater part of our industrial production is accomplished through specialized machinery requiring a large number of semiskilled machine tenders, as over against a comparatively few all-around machinists, tool setters, etc., an efficient system of training and selecting semiskilled workmen and women is needed.

Factory-training departments will do much to raise the general average of ability in the working force, and in proper combination with efficient employment-service departments there is no doubt they could be of immense service in securing a selected and adaptable working personnel. To these agencies should be added proper foreman training and measures which will secure, as far as it is possible to do so with routine tasks, the interest of the laborer in his work.[1]

As England discovered its women, so we, during the war, have discovered that latent ability to work with the hands is not confined to our industrial classes. A costly mistake was made in not selecting more carefully the men to be trained in the schools under the Committee on Education and Special Training, but the

[1] See R. B. Wolf, "The Creative Worker," an address delivered before the Technical Association of the Pulp and Paper Industry, May, 1918. Also, A. B. Wolfe, *Works Committees and Industrial Councils* (Emergency Fleet Corporation, 1919), pp. 16, 26, 27, 81–88.

experience there gained serves to indicate that a real system of industrial education in this country would uncover and develop an immense amount of valuable mechanical capacity that now goes to waste. With opportunity for this capacity to develop, with proper organization to give scope to the instinct of workmanship, and with the up-grading of subnormal men already on the job, our output per capita could doubtless be greatly increased even with a pronounced reduction of hours.

War experience has also demonstrated the value of training under actual working conditions. It is not unlikely that there will henceforth be a tendency away from evening schools toward intensive or part-time training in factory training departments. The amateurish quality inherent in much public-school technical training will be replaced by the professional spirit, under conditions which will give the vocational motive its greatest force. Methods of instruction will likewise be affected. Theory and practice will be bound together under production conditions.

The business man and the taxpayer will be interested in the question of the cost of training under the old and the new plans. Experience with intensive training in the shipyards seems to indicate that measured by actual product pupils in training departments are from 60 to 80 per cent as efficient as the average man on the job. The work actually produced by men under training may be, therefore, under the new plan, an important factor in defraying the costs of training. Roughly, the cost of training in a factory training department working up to production standards as to quality of output will be as follows:

$$\text{Cost} = \text{tools and material spoiled} + \text{cost of superintendence, etc.} - \text{product}$$

If wages are paid on a piece-rate basis to men in training, wage cost does not enter into the equation, nor does it if paid on a time basis and adjusted to the average output of men in training. If a premium above this rate is paid to get men to take the training, it must be charged to training cost. Analysis of training-department records, where carefully kept, will show what the actual training cost is. There is no accurate way of calculating training

cost under the old apprenticeship system. It seems probable, however, that intensive training under production conditions and on production work will prove to be cheaper—as far as it can be utilized—than the older methods.

Another issue which reconstruction may raise is, Who shall pay for industrial training—the industry, the man trained, or the people at large? Federal grants under the Smith-Hughes Act and the duplicate appropriations required from the states, if they wish to share in federal funds, will throw an increasing burden on the taxpayer. No fault need be found with this tendency, as an incentive to the development of a system of industrial education in this country. But industrial education under public direction, and at public expense, should aim, so far as is compatible with practical results, at breadth and grasp of principles rather than at provision of intensive training for specialized jobs. The cost of developing the specialized skill or adeptness needed in a given industry, it may fairly be argued, should be a charge on the industry itself, ultimately handed on to the consumers of the particular goods produced. If this be a correct division of the costs of general and special industrial training, it is a strong argument for the institution of factory training departments at the expense of the factory owners.

Another question which reconstruction will probably sooner or later bring up will have to deal with the control of training. The issue of public versus private or corporate control of the general industrial educational program need not here be entered into. The danger is that "business" will try to capture the public courses for specialized intensive training purposes. A clear-cut issue may arise, however, between plant managers and employees over the control of the factory training department. If the works committee movement gains a permanent foothold, or if organized labor secures the power of enforcing a "permit" system like that enforced in the shipyards on the Pacific Coast, employers will have to stand ready to accept a certain measure of co-operative control in this as in other matters. Since the workers are quite as much concerned in methods and standards of training as are the employers, it seems difficult to find valid reasons why they should not have a voice in the control of training.

Similarly it is quite possible that the needed standardization of training for the different trades and processes can best be accomplished through an autonomous industry rather than through legislation. If employers and employees can bring themselves to the formation of works committees and joint industrial councils it is probable a satisfactory medium of standardization could be found. The solution of such questions, however, awaits the trend of industrial reconstruction in general.

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# ACCOUNTING AS AN ADMINISTRATIVE AID[1]

## A. FROM THE VIEWPOINT OF THE BUSINESS MANAGER

Business administration is largely a matter of control—control and direction of the various factors involved in the conduct of a business enterprise. The basis of control is information. In fact, business control, and hence scientific administration, may be said to consist of the proper application of information correctly interpreted.

Business methods and practices are changing so rapidly, new problems are arising so frequently, and conditions vary so widely in different localities and different lines of business that set rules for the administration of a business cannot be established. It is true that there are certain general principles which may be regarded as more or less universally applicable, but their particular application in each specific case must be influenced by current information in regard to the factors involved. It is, of course, untrue to assume that the business executive is not influenced by precedent or that his acts are governed entirely by present expediency, but it is important to realize that he is continually revising his past conclusions and policies in the light of present information—information in regard to the past and information in regard to the probable future.

When business organization was simple and the business enterprise small and its activities local, the owner, who was also the manager, was able to obtain without assistance the necessary information upon which to base the conduct of his business. This is still true in some cases, for instance, the village storekeeper. He may keep his accounting records, plan his sales campaign, determine the extent and nature of the advertising to be done, select the goods to be purchased, secure the necessary funds from sources which he chooses, and actively direct, if not actually perform, all the executive operations of his business. He is able

[1] The writer is indebted for certain parts of the subject-matter of this article to his colleagues Mr. George E. Frazer and Mr. A. C. Hodge.

to do this because the information upon which he bases his actions is usually obtained in the daily routine of business or, if not, is obtained without material effort since the factors concerned are few in number, simple in nature, and local in extent. Moreover, the information involved is sufficiently simple, so that the owner is able to interpret and correlate it without difficulty.

Since business organization has become more complex, it is impossible for the executive manager of the business enterprise of material size to perform all the functions suggested in the case of the village storekeeper. It is impossible for the manager of a large department store, for instance, actually to direct, much less actually perform, the work necessary for its administration. As a consequence in such a business and every business of material size the management must rely on various specially trained individuals, subordinate managers they may be called, to assist in the formulation and the execution of its administrative policies.

To understand the function of such subordinates it is only necessary to notice the working organization of any modern corporation. The authority for the conduct and control of a corporation is vested in the stockholders, but they usually find it expedient to delegate this authority to a number of directors, who, by training and experience, are more expert in deciding upon the policies to be followed. The directors, although they may be skilled in the administration of certain types of business, find it wise to delegate their authority, in part at least, to certain officials who are expert in the conduct of the particular industry concerned. The officers, in turn, find that although they are competent to decide upon the general policies to be followed, it is necessary for them to employ various specially trained men who are technical experts in the specific phases of the firm's activities who will assist in the formulation and execution of its executive policies.

Thus the president or general manager may have subordinate to him and reporting to him:

1. A sales manager, who is in charge of the marketing of the products or services upon whose sale the business depends for its chief revenue. This sales manager may also have subordinates, as, for example, one in charge of domestic and one in charge of

foreign sales; and subordinate to or co-ordinate with him there may be an advertising manager with his staff.

2. A merchandise manager, in the case of a trading business, who supervises the purchase of the goods to be sold. In a large business he would be assisted by various subordinates who are specialists in certain types of merchandise purchasing.

3. A production manager, in a manufacturing business, who is responsible for supplying through production the amount of the product or service necessary to supply the demands of the customers. The purchasing of materials necessary for this purpose would be in charge of a general purchasing agent who might or might not be subordinate to the production manager, but who in any case must co-operate with him.

4. A financial manager, who is responsible for the formulation and execution of the financial policy of the business. Usually he is not given final authority in cases of material importance, but it is his duty to provide the information which will serve as a basis for formulating the financial policy of the business and to execute that policy after it is formulated. Subordinate to the financial manager, who is sometimes called the treasurer or controller, there may be a credit manager and a collection manager. In any case there must be close co-operation between the financial manager and those who guard the credits of the firm.

5. Miscellaneous managers, such as superintendent of buildings, operating superintendent, employment manager, etc., whose titles indicate their duties.

The foregoing list of subordinates who assist the president or general manager in the formulation and execution of the policies of the firm is intended to be suggestive rather than inclusive. The ones mentioned are those which are necessary to supervise and control the functions which are common to all businesses. In every mercantile and industrial business, at least, sales must be made, the goods or services sold must be produced or purchased, the operations of the business must be financed, and the equipment and material necessary for carrying on these operations must be secured and its maintenance provided for. Since it is necessary that these functions be performed, it is expedient that duties be

delegated along functional lines and, in so far as it is possible, that managers be appointed who are proficient in particular functions and that responsibility be placed accordingly. Of course, in the smaller business the same manager may be responsible for two or more functions as outlined above, but this does not destroy functional responsibility; it means only that this manager is acting in a double capacity.

The employment of such functional managers makes the problem of control more complex and the need for information which will serve as a basis of such control more imperative. Functional control if it is to be exercised in a rational way will necessitate information of three kinds: (1) information which will enable the chief executive officer or officers to determine the general policies of the business and the duties which should be delegated to the functional managers; (2) information which will enable each functional manager to perform properly the duties delegated to him and to co-ordinate his activities with those of all the other functional managers; (3) information which will enable the chief executive officer or officers to judge as to the efficiency with which the duties delegated to the functional managers have been performed by them.

It can readily be realized that it is impossible for the executive managers of a business of appreciable size to obtain without assistance the information stated above. Moreover, it is impossible for the managers to interpret such a mass of detailed statistics as would be involved in obtaining such information so as to use it as a basis of rational administration until it has been rearranged, classified, and presented in simplified form. In other words, it is necessary that the chief executive and the functional managers receive reports which provide the information which is necessary to serve as a basis of management. Such reports can be trustworthy and effective only when they are based on accounting records which have been designed and constructed in the light of the operations and organization of the particular business concerned. Thus it can be seen how accounting becomes an aid and a vital aid in business administration.

But if accounting is to serve as a basis of functional control it must be something more than it has been in most cases in the past—it must be something more than a history of past results, which serves as a history only, and something more than a statement of present conditions, which does not show how the present came to be or indicate what the future may bring forth. As previously stated, business management is largely a matter of control, and control necessarily involves the future. The past is gone and cannot be changed, and it is only future operations over which control can be exercised. Accounting, therefore, if it is to serve as the basis of functional control, must not only give information which will show the result of past operations, which is of course highly important, but it must give that information in such a form that it can be used as the basis for planning future operations. It must not provide records which show only the net profit or loss for one period, but it must provide records from which information can be obtained which can be used to plan for an increase of profit during the next period. Furthermore, it must provide for reports which will serve as a current check on the operations which result from these plans. Accounting, if it is to serve as an aid in administration, must provide information which can be used as a basis of action and not information which can serve only as a basis of repentance.

Although the activities and operations of different businesses vary widely, there are, as stated above, certain functions which are common to all mercantile and industrial concerns, at least. These functions may be stated as follows: (1) the sales campaign; (2) purchase and stock control; (3) production planning; (4) plant maintenance and extension; (5) funding of credit required and credit extended.

If accounting is to serve as a basis for functional control it must provide information which will serve not only to make possible the performance of each of these functions but also to co-ordinate them into a well-formulated business program. To discuss the use of accounting in the control of each of these functions is beyond the scope of this article, but this use can be illustrated

by a brief explanation of the relation of accounting to one of these functions, the sales campaign.

The owners or officers of either a trading or manufacturing industry must of necessity estimate the probable sales of their business for each season or fiscal period. These estimates may be made very unscientifically and may be recorded very informally, or they may be made as a result of a very careful analysis of all the factors involved and be presented by means of a formal report, but in either case an estimate must be made as a basis for planning for the future. In the case of a trading business, the volume of purchases made and the provisions for handling them are dependent upon the sales anticipated. In the case of the manufacturing business, the volume and nature of production is dependent upon the sales estimated. The principles involved in the making of the sales estimate are very similar in both trading and manufacturing industries, but the application and use of the information provided by the estimate is somewhat different in the two cases, so for the purpose of the present illustration the preparation and use of the sales estimate in the sales program of a trading business will be considered.

It is self-evident that in a mercantile store goods must be purchased and placed upon the shelves or in the wareroom before they can be sold. The management must make estimates, however scientific or unscientific, as to the volume and character of the sales expected to be made in a given period before the buyers for the store can make contracts and select the quality and amount of goods that the store is to offer for sale. The small retailer whose business is restricted to one commodity, say a dealer in rare oriental rugs, may say he will buy when he can and plan for the sale of the merchandise when he has it in his possession. But a large retail business, such as a department store, which sells many thousands of different items of merchandise, must set up a program of what sales are expected to be if purchases are to be made intelligently in the source markets all over the world, and it is necessary for the purchases to be completed before the customers of the store come to buy. Even in the case of the dealer of oriental rugs, it is probable that he will learn by experience that certain

kinds or types sell more readily than do others, and consequently he will seek those kinds when he makes his purchases. In so far as he does this he is estimating future sales and being guided thereby. In other words, he is making an informal sales estimate.

The sales anticipated as reflected in the sales estimate not only affect the buyers in the purchase of their goods, but also affect the plans of the various functional managers of the business. The officers of the store who are responsible for providing proper space for counter stocks, for reserved stocks, and for wareroom stocks must have before them some tangible data as to what stocks will be purchased, when they will be sold, and in what volume. The operating managers must work with an estimate of sales at hand if sales persons are to be secured and trained properly. So also the operating officials must anticipate the volume and character of sales to a fairly accurate degree if they are to employ a proper number of repair persons, packers, wrappers, telephone operators, delivery men, etc., and if they are to train these employees into an efficient working force animated with the service ideals of the store and thoroughly familiar with operating schedules of retail selling and order buying.

The treasurer or other officer charged with financing the purchases and expenses of the store must have very definitely in mind the volume of revenue from sales that the store may reasonably expect to receive from week to week, even from day to day. The owners themselves or the president or general manager as their agent must carefully study expected sales when investing capital in new divisions or departments of the store, or making additions or extensions of the plant, or in deciding with reference to forms of customers' credits.

In short, the owners and officers of a wholesale or retail store of appreciable size must set up a sales program for each season or fiscal period in order that the customer may receive proper services from co-ordinated purchasing, operating, financing, maintenance, and extension. For instance, in a department store if the linen buyer in Belfast, the shoe buyer in Boston, the millinery buyer in New York, and the grocery buyer in Chicago are to work as a unit they must know not only the volume of sales in their own

lines, in making contracts, but also the volume and character of sales expected in all departments of the store so that they may select and purchase qualities and quantities complementary and supplementary to all other lines of goods handled by the store. But the linen buyer in Belfast and the shoe buyer in Boston must not only work in harmony with each other; they must work in harmony with the traffic manager, the head packer, and the superintendent of the delivery service. The one vital point of contact between the selector of merchandise and the operating man who handles the order for the customer is that they both premise their work on the same expectancy or estimate as to the volume and character of business. It can be readily seen, therefore, that correct and accurate information in reference to sales anticipated is of the utmost importance in the internal control and management of a modern commercial business. Although many and varied reports are made in reference to sales which present information of various kinds which is of value in sales control, the sales report of primary importance from the viewpoint of planning future operations is the sales estimate.

The sales estimate is a report which gives in a more or less summarized yet comprehensive form the sales desired and deemed possible during the next fiscal sales period. In making such an estimate of future sales many factors have to be considered. Although these factors are almost innumerable and the information necessary for their consideration and interpretation is almost indefinable, such information for the convenience of discussion may be considered as of two kinds: (1) knowledge of trade conditions which is obtained as a result of market analysis; (2) knowledge of the amount and nature of previous sales as shown by the accounting records which involves sales analysis and comparison. From the foregoing it can be seen how very vital is a knowledge of the probable future sales in the control, not only of the sales department, but also in the control of the other functions of the business, since these functions are all closely interwoven. It can also be seen how necessary accounting records and reports are in arriving at such an estimate of sales. Without accurate information in regard to past sales, such as can only be obtained from the account-

ing records and reports, no dependable estimate of future sales is possible.

The sales campaign has been discussed somewhat at length because the sale of goods or services is the ultimate object of all businesses organized for profit. Although the effect of the estimated sales upon the other functions of the business has been emphasized in the foregoing discussion, if each of these other functions were discussed in detail it would be seen that the estimated sales would also be influenced by a consideration of them. For instance, it would be indeed foolish to attempt to make sales to a greater amount than it is possible to purchase or manufacture. It would also be unwise to attempt to make sales which would involve operations of the business to an extent beyond what the business would be able to finance. In many other ways it might be pointed out how all the functions mentioned above are closely interrelated and how a consideration of one of them involves a consideration of all the others.

The foregoing discussion suffices, however, to show that the consideration of any of these functions involves the use of certain information which can be obtained only by means of accurate accounting records. It can be seen, therefore, without going into a detailed discussion of each of these functions, that accounting is a prerequisite to functional control, and that functional control is a necessity for scientific business management.

In the foregoing discussion emphasis has been placed upon the value and use of accounting as a basis of planning future operations. Planning of future operations involves the making of estimates of future results. As indicated above such a conception of the function of accounting is opposed to the more or less prevalent view. Most accountants will contend that their duty is that of the historian and not that of the prophet; that they can certify to what has happened but cannot certify as to what may happen. From the viewpoint of the public practitioner this attitude is in the main justified. He is usually employed at the end of a fiscal period and is required in a brief space of time to prepare reports showing the financial condition of the business and the results of its past operations. In the brief time at his disposal his ability is

often taxed to the utmost to ascertain past results. He is familiar with the operations and policies of the business only as they are reflected in the accounting records. He has no control over the future operations of the business and he would be rash, indeed, to risk his professional reputation in an attempt to estimate future results. In so far, therefore, as the public practitioner is performing the duty of an auditor he is justified in confining himself to an estimate of past results and refusing to enter the realms of prophecy.

However, the permanent accounting staff of the business occupies a different position, and a failure on its part to provide information and reports which may serve as a basis of estimates or to assist in the formation of such estimates is unjustifiable. It is familiar with the operations and policies of the business, it has some control of and relation to future operations and has the opportunity to revise its estimates in the light of current operations, and its reputation is not impaired by an incorrect estimate as is that of the public practitioner. If it fails to provide for such estimates which can be used as a basis of future operations it fails to perform the function which is the chief justification for its existence. In the case of the public practitioner, when he is called upon to construct records he must have in mind the formulation of such estimates and he must be sure that the records which he instals will provide information which will make such estimates possible and not provide information which will serve only as a basis of the conventional balance sheet and statement of profit and loss. Too often the accountant in the installation of an accounting system regards the *pro forma* balance sheet and statement of profit and loss which he is accustomed to making at the end of the fiscal period as the ultimate goal of accounting and constructs his system accordingly. As a consequence the accounting records too often do not serve as an aid in administration, but only as a means of providing postmortem evidence. Probably in the future the business public will come to realize that all accounting reports are but estimates—estimates based on the best facts available and the professional judgment of the one who makes the estimate. It may then be realized that though estimates of past results, such as the conventional balance sheet and statement

of profit and loss, may be more certain, estimates of future results, such as the sales estimate, production budget, purchase budget, selling expense budget, etc., are equally useful. In this case accounting records and reports will become a more valuable aid in administration and control than they have been in the past.

Although in the preceding discussion the use of accounting reports as a basis for internal management has been emphasized because the chief function of accounting is to serve as a basis of functional control, it of course must be realized that the business has relations with certain parties outside the business and that accounting reports are necessary to serve as a basis of these relations. A few of these parties may be mentioned by way of illustration.

The various parties who have investments in the business desire to be able to judge of the profitableness of that investment and the desirability of continuing it or of adding to it. It may also be found desirable to interest additional investors and thus secure additional capital to extend the business and place it on a more profitable basis. Needless to say, the prospective investor will demand that information be furnished him to give him some idea of the condition of the earning power of the business before he will risk his funds by investing them therein.

Investments in the modern business enterprise are made on a variety of terms. Different classes of investors have different kinds of claims on the business, as regards the amount of income they may expect, the guaranties for the payment of that income to them, the conditions under which their investment is to be returned to them, and the security which they have for the safety of the investment. There are marked points of difference in the claims on both capital and income among the holders of the most common types of corporation securities, such as common stock, preferred stock, cumulative or non-cumulative, mortgage bonds, collateral trust bonds, equipment trust certificates, and so on. It follows from all this that accounting records must be kept, not only for the use of the internal managerial organization, but also in such a manner as to permit the preparation of reports that will set forth clearly the status of each of the different classes of investors,

not only to protect the rights of each class in the distribution of net profit, but also to enable each to estimate closely the value of his investment or proposed investment.

Another class which is keenly interested in the financial and operating health of the business enterprise is the creditors. There are two chief kinds of creditors beside the bondholders, who have already been included among the investors, though strictly speaking they are really long-time creditors. The two kinds of short-time creditors are (1) trade creditors, and (2) commercial banks. Both classes typically require reports setting forth the financial condition of the concerns which apply to them for credit. Some commercial credit agencies and many banks have standard forms upon which applicants for credit are required to make reports. The emphasis in these reports is somewhat different from that in reports to owners and long-time creditors like bondholders, but on the whole they usually contain about the same information as the latter. Neither type of report presents as difficult a problem in accounting as the first class mentioned, namely, the reports for managerial purposes.

Most businesses are of sufficient importance, owing to their size or to the nature of their product, so that they involve a public interest in the way that they are carried on. There is nothing new or strange about this as applied to the so-called "utilities," such as the common carriers, the gas and electric companies, etc. In the case of these businesses it is recognized that the public is closely concerned and regulation is regularly undertaken, with the double purpose of making sure (1) that the service rendered is adequate and satisfactory in quality, and (2) that it is rendered at a reasonable rate. It is easy to see that no regulatory body could hope to accomplish much along the lines indicated, unless it were furnished with reports showing the amount of investment in the company in question along with its earnings and expenses. Otherwise it would certainly be in no position to judge whether the company was earning enough to pay its investors a return sufficient to keep their capital in the business over a long period and to attract additional capital as it is needed in order to keep pace adequately with the demands of the public for the goods or services in question. As a result we find that practically every

company of this character is required by some regulatory body to make reports on standardized forms at certain times. The records that must be kept in order to prepare these required reports are as a rule such as would serve well enough as a basis for preparation of reports to investors or to creditors but would not furnish enough analysis for purposes of managerial reporting.

The necessity of reporting to government agencies is not confined to the utilities, however, but extends now to practically every business enterprise. The requirements of reporting for the purpose of the income, excess-profits, and war-profits taxes have practically forced even the most insignificant businesses into some sort of record-keeping. During the war the interest of society as a whole in the individual business reached a point of development previously unknown. The raw materials and supplies used, the transportation facilities, the labor supply, the financing, the disposal of the product, and the rate of profit, all received the attention of the government as the exigencies of the war seemed to make it desirable. It is fairly safe to predict that in the future two things will be true as a result of this war-time regulation: (1) There will be a greater degree of government regulation of private business than in the past, necessitating for many businesses more complete records than they formerly kept. (2) Many small businesses, having had the matter of reporting forced upon their attention, will arrive at a better realization of its importance, and will in the future maintain more adequate systems of records and make more use of reports within the business.

It can be seen therefore that in the administration of a business the management is brought into relation with various parties both within and without the business organization. The success of the business is dependent upon the result of the operations which arise from these relationships. To exercise proper control and direction of these operations, classified and summarized information is necessary, and this information can be obtained only from reports made from the accounting records. Probably, therefore, there is no better way to summarize what has been said with reference to the value of accounting as an administrative aid than to give the following suggestive though not inclusive outline of the various

parties interested in the modern business, and demanding reports prepared from the records kept in that business:

1. The managerial staff
   *a*) President, or general manager
   *b*) Sales manager
   *c*) Head merchandise man, or purchasing manager (in a commercial business)
   *d*) Factory superintendent, or production manager (in a manufacturing business)
   *e*) Controller, or financial manager
   *f*) Other functional managers, varying with the organization of the business
2. Investors, present and prospective
   *a*) Stockholders of various classes
   *b*) Bondholders also of various classes
3. The creditors
   *a*) Trade creditors
   *b*) Commercial banks
   *c*) Other creditors
4. The government
   *a*) For regulation of the price
   *b*) For regulation of the quality
   *c*) For purposes of taxation
   *d*) For purposes of limitation on the amounts of certain materials and services that can be used
   *e*) For the protection of those employed—regulation of hours, wages, working conditions, child labor, female labor, etc.

### B. FROM THE VIEWPOINT OF THE COLLEGE INSTRUCTOR

In the foregoing discussion an attempt has been made to emphasize the importance and value of accounting as an aid in administration from the viewpoint of the business manager. It is the purpose of the remainder of this article to point out the effect of such a conception of the purpose and function of accounting upon the organization and content of college courses in this subject.

There is probably no other course in the college curriculum which has grown so rapidly in popularity in the last few years as accounting. This growth in popularity is attested, not only by the rapidly growing number of colleges and universities which have added courses in this subject, but also by the increasing number of courses offered in the institutions where it has already been

established, and even more so by the enormous increase in the number of students taking these courses. It is not strange, therefore, since college courses in accounting have had such a mushroom growth, that the instruction offered in the subject is rather disorganized and unstandardized.

There can scarcely be found any two institutions which give courses with the same content, and the present tendency seems to be toward a wider divergence rather than to a nearer uniformity. However, if the courses offered in the various institutions can be judged from the descriptions given in the official bulletins, they can be classified under about three heads according to the purpose which the organizers of these courses seem to have in view.

In some institutions courses have been organized and taught by public accountants and very naturally they regard the purpose of such courses to be the preparation of students for public accounting work and the subject-matter presented has been arranged accordingly. In these courses the principal emphasis has been placed upon the construction of accounting records and the auditing of such records after they have been constructed.

In some institutions courses have been organized and taught by men who have had their preliminary training in economic theory and they have deemed the purpose of such courses to furnish a sort of complementary training to that obtained in other courses in economics. Consequently they have emphasized the use of accounting as a means of social control and have given their principal attention to a consideration of the various theories and problems of valuation, discount and premium on bonds and stock, the distinction between capital and revenue charges, the treatment of interest, and similar questions.

In the third place, there is a sort of nondescript group some of which are inclined toward the first group mentioned and some toward the second group: Instructors of some of these courses have originally been instructors of bookkeeping in secondary schools and in such cases they insist upon rather extensive training in bookkeeping practice and routine. Such training is given presumably upon the theory either that the student is preparing to do such work upon completion of his college course or that an

understanding of detail and technique is necessary in order to understand the principles of accounting which are presented in the advanced courses.

The reasons for each type of courses can be explained in the main on historical grounds. The first courses organized in accounting were generally in connection with evening schools, and the students who took these courses were usually employed as bookkeepers or junior accountants. The public accountants who taught these courses naturally assumed that the ultimate goal of at least the majority of such students was the practice of accounting as a profession, and they organized their courses accordingly. Such courses performed a useful function, and at the present time such courses probably fulfil the needs and wishes of the majority of the students attending the various evening schools of commerce. When courses in accounting were first introduced into the curricula of day courses they were usually placed in the economics department and were taken by students who were interested in education from the social rather than the business viewpoint. They were taught by instructors whose training had been of an academic nature, and it is but natural that the use of accounting as an instrument of social control should be emphasized and that the second class of courses described above, should result. Here again the wishes and needs of the majority of the students enrolled in these courses were probably satisfied at the time that these courses were originally organized. The third class of courses is the result of the previous training of the instructors or of the attempt of the instructor to follow one of the other type of courses with certain modifications. Generally these courses have been the least satisfactory and would seem to have a less definite object and function than either of the other groups.

Although it can be seen that the courses now given in schools of collegiate grade are more or less the result of the circumstances existing at the time of their origin, and probably fulfilled a useful function at that time, it would seem that circumstances have so changed within the past few years that there is a need for courses in this subject which have a different function from those described above. As suggested above, when courses in accounting were

first organized as a part of the college curricula there were no separately organized schools of commerce whose avowed purpose was the training of students for administrative positions in business. Recently, however, such schools of commerce have been organized in connection with most of the universities of even moderate size, and the courses in accounting are invariably a part of the curricula of these schools. Since the courses in accounting are a part of the curricula of the schools of commerce, it would seem that the function of the curricula as a whole will have to be considered before the function of the accounting courses can be determined.

Those who have had experience with undergraduate students realize that few of them know in what phase of business activity they will engage until near or after graduation. Even if they are decided as to their future work, in the present organization of industrial society it is impossible for one to be proficient in any type of business or any department of a particular business without a considerable familiarity with other types and the other departments. It is impossible to study all the various types of businesses or the various forms of organizations which are found in different businesses, but the functions common to all businesses and the general principles of organization can be mastered. It would seem, therefore, that it is the function of the undergraduate course in commerce to give such a training rather than to emphasize the technique of any particular business or profession. In other words it is the function of such a course to show the student the relation of the "business manager" to the various factors which are involved in the conduct of the business enterprise.

Such a conception of the function of the school of commerce curriculum is well expressed in the following statement, which gives the minimum requirements in the Business Division of the School of Commerce and Administration, University of Chicago. They are, of course, additional to English, foreign language, and other requirements of the University in general.

1. The manager's relation to the physical environment and technique:
   Courses: Geography 3 and 5; Physics and
   Chemistry desirable

2. The manager's relation to finance:
   Courses: Financial Organization of Society;
   Manager's Administration of Finance
3. The manager's relation to personnel:
   Courses: Labor Conditions and Problems;
   Manager's Administration of
   Labor
4. The manager's relation to risk:
   Courses: Risk and Risk Bearing
5. The manager's relation to the market:
   Courses: Commercial Organization I and II;
   Foreign Trade Course desirable
6. The manager's relation to social control:
   Courses: Business Law I, II, III;
   Social Control of Business Activity
   desirable
7. The manager's relation to administrative control:
   Courses: Statistics; Accounting I, II, III

The function of the course in accounting in such a curriculum is well indicated in the foregoing outline—it is to teach the student the use of accounting as an instrument of administrative control. It is not the primary function of such courses to train the student to become a professional accountant nor to use accounting as a means of social control, nor to become proficient in bookkeeping technique. Therefore neither of the three groups of courses discussed above will suffice. Probably not 10 per cent of the students enrolled in such a school will desire to practice accounting, and probably not 5 per cent are interested in accounting as an instrument of social control as a primary consideration. Of course, all business men are interested in the relation of their business to the agencies of social control. The great majority of such students expect to be concerned in business administration in the many various fields, and they are interested in accounting, not in a technical way, but only as emphasized in the previous discussion, as an administrative aid. If accounting is to be presented as an aid in administration it requires a different presentation from that provided by the orthodox courses in this subject. Consequently in the institution mentioned above the accounting courses have been organized with this aim in view.

An introductory course of three months is given which is designed to give the student an understanding of the purpose and function of accounting, the nature of the accounting process as a whole, and some knowledge of accounting practice and technique. One outstanding characteristic of the course is that it does not look at accounting from the bookkeeping viewpoint and hence does not commence with a discussion of debit and credit. On the contrary it emphasizes from the beginning the use of accounting as a means of making reports which can be used in business management. Consequently the balance sheet and statement of profit and loss are studied as an illustration of such reports and then the accounting records are introduced as the means by which the information is obtained which is necessary to make these and the various other reports to be studied later. It can be seen, therefore, that the use of accounting as an administrative aid is emphasized from the first day of instruction. This method of attack is illustrated in the outline at the end of this article.

After this introductory course the remainder of the year is devoted to a consideration of the use of accounting in the control of the various functions of a business which were listed above. This involves the consideration of the use of accounting in the preparation of estimates and budgets which can be used as a basis of future plans. After a brief discussion of the use of accounting as a means of investment control, consideration is given to the formulation of the sales program, which serves as a basis of all the other plans of the business. The preparation of the buying budget and the production budget which are premised on the sales estimate is considered in considerable detail as are the selling and advertising expense budget, the maintenance and depreciation budget, and the financial budget. Not only is the preparation of the various budgets considered, but particular emphasis is placed on the reports necessary to exercise control over these estimates and to make possible their revision as the results of the period demand. Although some attention is given to the accounting records which serve as a basis of supplying some of the information contained on these reports, particular emphasis is placed on the fact that many of the most important statistical data used in

business management are not obtained from debit and credit records, but from supplementary sources such as salesmen's reports, sales tickets, delivery records, etc. It is also emphasized that it is the use of the reports in business management which is of primary importance, and not the technique of the records from which the information is obtained. In other words the student continues to look at accounting from the viewpoint of the business manager rather than from the viewpoint of the bookkeeper. The subject-matter covered is indicated to some degree in the brief outline given at the end of this article.

All students enrolled in the school of commerce take this year's course. Those who are interested in accounting as a means of social control take in addition courses which emphasize this phase of the subject. Obviously these students should be familiar with the operations over which control is to be exercised before attempting to study the use of accounting as a means of control. The first year's work must necessarily be a prerequisite therefor. Those who expect to enter the accounting profession take, in addition to all the foregoing courses, courses in accounting practice and technique and in auditing. It should be obvious that if the student is to study the construction of records and the preparation of reports from the viewpoint of the public practitioner he must first understand the nature of the information which the business executive desires for whom these records and reports are to be prepared. He needs, therefore, to understand the use of accounting as an executive or administrative aid before attempting to obtain a professional knowledge of it.

Such an organization of college courses in accounting offers a course which will satisfy the needs of all students, both those who wish accounting as a part of a general business training and those who wish it as a professional training. For the benefit of those who may be interested a brief outline of the first year's work as discussed above is appended hereto.

## *A FIRST YEAR'S WORK IN ACCOUNTING*

PART I. POLITICAL ECONOMY 10

This is the introductory course in the field of accounting, designed to supply the student with an understanding of the accounting process as a whole, and with some knowledge of actual practice and technique. It is intended to furnish preparation necessary for taking up any of the special courses which follow it, and an attempt is made to give the student a vision of the various standpoints from which reports may be required, leaving the fuller development of these various uses of reports for the later courses.

I. The accounting process
  A. Meaning and function of accounting
    1. To furnish information desirable in control and management of the business
      *a*) As regards internal problems and organization
      *b*) As regards external relations
  B. Accounting reports as an executive aid
    1. Balance sheet
    2. Statement of profit and loss
    3. Miscellaneous reports
  C. The account as a means of classifying and summarizing information
    1. Nature and function of the account
    2. Construction and interpretation of specific accounts
    3. Summarizing the accounts at the end of the period for reporting purposes
  D. Books of record as a means of collecting and recording information as a basis of the accounts and reports
    1. Nature of books of record
    2. Illustration of records for particular purposes
  E. Business papers and vouchers as original evidence of business transactions
    1. Nature and function of such vouchers
    2. Illustration of business papers for particular purposes
      *a*) Negotiable
      *b*) Non-negotiable
    3. Their relation to the books of record

II. Development and elaboration of the accounting process
  F. Specialized forms of records
    1. Purchases
      *a*) Purchase routine in different types of business
      *b*) Some basis for purchase analysis
      *c*) Methods of recording

2. Sales
   a) Sales routine in different types of business
   b) Some basis for sales analysis
   c) Methods of recording
3. Cash
   a) Relation of bank to handling of cash
   b) Internal checks—the voucher system and petty cash funds
   c) Methods of analysis and recording

G. Construction and interpretation of particular accounts
1. Fixed assets
2. Working assets
3. Expense and revenue accounts
4. Proprietorship and net profits
   a) In general
   b) As modified by the corporate form of organization

H. Construction and interpretation of accounting reports
1. The conventionalized forms—balance sheet and profit and loss statement
   a) Basis for classifying and grouping the items
   b) Their use for credit purposes
   c) Their use in management control
2. Some other possible forms of reports
3. Use of graphical method in reporting

PART II. POLITICAL ECONOMY 101 and 102

These two courses deal with the use of accounts as a means of obtaining information which can be used in administrative control, primarily in internal management and control. At present the course is organized under the following heads:

I. Investment control
1. Control of assets and liabilities
2. Control of income and expense
3. Relation of accounting to functional control

II. Sales control
4. Sales analysis and sales reports as a basis of the sales program
5. Advertising and selling expense accounts, reports, and budgets

III. Purchase and stock control
6. Relation of stock investment to sales program
7. Purchase analysis and reports as a basis of the buying budget

IV. Production control
8. Control over stock made for future orders and special orders
9. Control of materials, labor, and expense

V. Control of plant maintenance and extension
  10. Maintenance expense
  11. New equipment and extensions
VI. Financial control
  12. Cash requirements
  13. Credit control
VII. Profits control and distribution
  14. Taxes
  15. Reserves
  16. Dividends
  17. Surplus
VIII. Budget making and control
  18. Organization of subsidiary reports in budget for the whole business
  19. Organization of accounting and statistics for controllership

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# WILL PRICES FALL?

## I. INTRODUCTION

The previous article[1] discussed the process by which the level of prices was raised and the quantity of circulating medium increased during the war. It is now our purpose to consider the possibilities of a fall in the general level of prices.

In his recent analysis of post-war prices[2] Professor Fisher observes that we have had a price revolution similar to that which followed the discovery of the New World and the appropriation of its great supplies of precious metals four hundred years ago. Professor Fisher bases his conclusion on the ground that there has been a permanent increase in the quantity of money multiplied by its velocity of circulation plus the quantity of credit currency multiplied by its velocity of circulation—in consequence of which the price quotient must remain permanently higher than it was before the war.

With the general conclusion that we are not likely to witness any considerable fall in the general level of prices in the *immediate* future I find myself in substantial accord. Whether the price revolution will remain permanent, however, depends, I believe, upon factors that are not adequately treated by a mere statement of the equation of exchange of money and goods. An appreciation of the probable post-war trend of prices can best be gained by a consideration of the probable expenses of production of commodities.

Let us consider first the relation between post-war prices and the volume of currency: It is generally assumed by quantity theorists that when bank currency has once been utilized it is practically certain to be used again—that when credit instruments have once entered the channels of circulation they remain there indefinitely as price-determining factors. This assumption, I

[1] See "War Finance and the Price Level," *Journal of Political Economy*, October, 1919.

[2] Irving Fisher, *The New Price Revolution*, a paper distributed by the United States Department of Labor, March, 1919.

believe, finds no verification in the actual processes of credit utilization. Let us illustrate:

To a considerable extent an expansion of bank loans was resorted to in connection with the Victory Loan. In order to discover what becomes of funds thus raised, suppose we trace the funds provided by loan expansion to the government and back again. Immediately speaking, the purchase of bonds by the banks, or the granting of loans to individuals for the purchase of bonds, resulted in an increase of bank deposit currency in the form of checking accounts. As soon as the government utilized its credit accounts with the banks the orders drawn against such accounts passed (largely) to business concerns to whom the government was indebted for war supplies. Upon receipt of these government payments the business men receiving them sent these checks to the banks for deposit. To the extent that the proceeds of these deposits were used in paying off bank loans of the depositors the result was a replenishment of bank reserves. To the extent that these deposits were not used to pay off loans, but merely to increase the balances of depositors, the result was of course to leave the ratio of reserves to deposits, in the banking system as a whole, the same as it was before the government utilized its credit. Now since the great majority of all businesses did have bank loans to meet, the inevitable result of the settlement of war obligations was to increase (immediately speaking) the proportion of bank reserves to liabilities.

Whether these reserves will again be utilized as a basis for additional loans and hence of new deposit accounts depends entirely upon the general business situation. So long as the war continued, new loans were of coursé consummated as fast as old ones were liquidated. But after the war new loans would be sought only so long as business men were assured of a profitable use of the funds borrowed. If the war were followed by a general business depression, there is no question but that the bank reserves would remain larger and the volume of outstanding credits much smaller than during the war period. The history of every period of depression attests the truth of this contention. It is significant that the quantity theory always ignores the phenomena of the business cycle.

The effect of the increased volume of bank reserves upon interest rates protrudes itself at this place. What happens when bank reserves are large and interest rates low? Not much of anything happened during 1914 and 1915, when the surplus reserves of the country were the largest ever known. Not much happens during any period of general business depression; for years bank reserves may remain high and market money rates low without any significant economic developments. Whether low interest rates will promptly be followed by an increase of business activity, which in turn will call forth an additional volume of loans, create an additional volume of credit currency, and reduce the bank reserves, depends altogether upon fundamental business conditions—among which low interest rates are only one factor.

The *Federal Reserve Bulletin* for October, received after this paper was in galley proof, contains a discussion of the connection between the expansion of bank credit currency during the war and rising prices, together with a consideration of the process by which deflation and falling prices are to be accomplished. This discussion is so pertinent to the analysis in this and the preceding paper that it merits a few words of comment.

With reference to the relation of bank credit currency to rising prices, it is pointed out that "while credit . . . . cannot create a situation which results in high prices, it is equally true that a situation which results in high prices cannot eventuate without the assistance and mediation of credit."[1] The Board finds the basic cause of the expansion of currency in the general buoyancy of industry and trade; it is this that originally creates a demand for and calls into existence the increased volume of bank credit currency. But the Board believes nevertheless that once an extension of credit is well under way, it acts as a stimulus to industry and trade, and becomes, perhaps, a causal factor. "It is at times difficult to say which is more cause and which is more effect, so closely interdependent and interwoven are the two."[2]

The Federal Reserve Board thus takes a position very different from that held by the typical quantity theorist.[3] The Board's

[1] *Federal Reserve Bulletin* (October, 1919), p. 912. [2] *Ibid.*

[3] It may be recalled that the Board has previously stated that the expansion in the volume of Federal Reserve notes was a result and not a cause of price advances.

knowledge of the process by which bank credit currency is created and utilized, by which it gets into circulation, has led to a denial of the naïve assumption that underlies the quantity theory, namely, that bank-lending power in the form of excess reserves is certain to be offered in exchange for goods on the market, that somebody will surely use that credit for the purpose of buying existing goods. The Federal Reserve Board now sees that whether such lending power will be used depends upon general business conditions and upon the price level itself. The Board does not consider also the relation of expenses of production to prices; the thought appears to run in terms rather of demand and supply of produced goods. It is doubtless because of this that the Board attaches more importance to bank credit currency as a causal factor, after a price advance is once under way, than does the present writer.[1]

Now for the Federal Reserve Board's view of the process of deflation. It is held that "prices will fall as savings accumulate and liquidation of the war-loan accounts of the banks ensues and production advances to the point where it more nearly matches the great increase in the volume of circulating or purchasing media which have been called forth during the successive emergencies of recent years."[2] It is believed that as the volume of rediscounts is decreased, the amount of Federal Reserve notes and deposit liabilities of the Federal Reserve banks will be accordingly lessened. At the same time reserves in both Federal Reserve and member banks would be automatically increased. "The whole volume of outstanding bank credit would thus contract itself, and the same causes that brought about the contraction would result in a lowering of prices, which would necessitate a smaller volume of pocket currency and a return flow of redundant currency to the banks."[3] Finally, increased production is necessary: "the effect of increased production will be to place a larger volume of goods against the greatly enlarged volume of our purchasing media, and thus to reduce prices."[4]

[1] While not denying that available credits may serve to stimulate somewhat an advance of prices during a period of active business, considerations of cost seem to me to be of much greater importance.

[2] *Federal Reserve Bulletin* (October, 1919), p. 913.

[3] *Ibid.*

[4] *Ibid.*, p. 914.

In the view of the Board "the way in must be the way out." Now the way in, that is to say, the process by which prices were raised from the 1914 to the 1919 level, was according to the Board mainly one of great business expansion which caused prices to advance and necessitated an increase in the volume of circulating media. "A reversal of this process" would seem to involve a great slackening of industrial activity, declining demand, and falling prices; and hence a lessened volume of circulating media. But the Board does not, in fact, countenance such a process. On the contrary, it stands for increased production in order to secure the "restoration of a proper balance between the volume of credit and the volume of goods."[1]

There is here a relapse into the simple quantity theory analysis. It appears to be merely a question of the total volume of goods as compared with monetary counters, actually or potentially in circulation. Moreover, it is assumed that the increased volume of production can be secured without the intermediation of bank loans; in a word, the Board here fails to recognize that currency is required to finance production, that it is not merely a medium for exchanging goods after they have been produced. Finally, it entirely fails to reckon with the relation of expenses of production to selling prices. This will be considered below.

## II. REASONS FOR MAINTENANCE OF HIGH PRICES

What now of the actual events up to date—September, 1919? So far as prices are concerned it is well known that they have dropped somewhat in certain lines and increased somewhat in others, due to forces affecting supply and demand in particular cases; but there has been no important change in the general average of prices. The explanation of a failure of prices to "return to normal" lies once more primarily with considerations of cost.

The business depression of the winter and spring of 1919 did not result in a reduction of the expenses of production. In fact, because overhead charges remained the same, a reduction in the volume of business increased the cost of production per unit. So long as the cost of production remained high business men every-

[1] *Federal Reserve Bulletin* (October, 1919), p. 914.

where stoutly insisted that their selling prices could not be lowered. Here and there a great reduction in demand was followed by a price concession; but, speaking generally, business men resisted a reduction of prices in the face of high and rising costs.[1]

Assuming competition among producers, there is little doubt that in the long run individual firms whose costs of production were low might, by cutting prices, increase the volume of business at the expense of competing concerns with high costs. But to a considerable extent business had during the war been organized on the basis of industries, and there was accordingly a powerful resistance after the armistice to the disorganization that would result if price-cutting were permitted. It was felt by most government agencies and by most business men that sharp cutting of prices by the most efficient plants would be socially disastrous. It was this fear of general disorganization that underlay the policy of the evanescent Industrial Board of the Department of Commerce, which led to a fixing of the price of steel at a level which would protect high-cost plants.

The powerful opposition of business interests to an assumption of the losses that would be necessitated if prices were lowered, coupled with the belief in many quarters that business could go ahead as well on a high as on a low price level—that the only difficulty lay in waiting—gradually led to a maintenance of prices at substantially the war level. Meanwhile great agricultural prosperity and the continuation of European demands have enabled us to go forward for a time, at least, on the old level of prices. A readjustment was temporarily avoided.

At the same time the hang-over financial requirements and obligations of the war were such that it was not until well into the spring that any easing of bank reserves was manifest. The maintenance of prices, moreover, obviously carried with it a continuance

[1] The development of accounting has an important bearing on the situation. The more efficient accounting practice becomes the more quickly cost of production affects selling prices. In agriculture demand and supply fix the price of produced goods. But increasingly in manufacturing lines computations of probable cost not only fix price quotations in advance of production but govern as well the volume that will be produced. This is not to argue, of course, that a very strong demand may not result in the adjusting of prices above cost for considerable periods of time.

of high operating costs and large working capital; hence when business revived in May and June on the war price level, bank loans once more expanded in volume. Inasmuch, however, as the physical volume of business in May and June was substantially below that of the war period, it is scarcely to be doubted that we would have found ourselves with a continuance of high prices and a diminution of the volume of circulating medium incident to a lessened total volume of production had it not been for a great orgy of stock speculation which developed.

With the easing of money rates in the spring of 1919 stock speculation soon absorbed the released funds. It is not to be understood that it was the slightly easier money rates that was the primary cause of the great increase in stock speculation. It was rather an unbounded optimism on the part of new investors who had grown wealthy during the war that led to the great bull movement.[1] The result of this increased stock speculation in the spring and early summer of 1919 was, nevertheless, to increase the volume of monetary counters in circulation and to tighten the money market.[2] The great volume of stock exchange loans, together with continuing government financial operations which were handled by the banks of the monetary centers, explains the great volume of clearings in June and subsequent months of 1919.

### III. ARE FUTURE PRICE REDUCTIONS POSSIBLE?

While the forces that were thus operating upon expenses of production for the first nine months—or more—after the armistice were such as to prevent a lowering of prices in most lines, it is not

[1] There were obviously numerous factors involved in the increased demand for securities. There was also one very important factor which restricted the selling of securities by an important group of investors, viz., the fear of taking profits by selling stock because of the high excess-profit taxes that would have to be paid.

[2] There was another very interesting result—one which shows that stock speculation is not always completely unrelated to productive enterprise. The fortunes made in the spring of 1919 in stock speculation were freely spent in the purchase of consumers' goods, and this was no mean stimulus to retail trade. These fortunes, be it observed, were not usually made at somebody's expense. They were derived from successive stock advances and successive sales; and the funds involved came from the commercial banks, where they might otherwise have remained idle.

impossible that this condition might be somewhat changed in the next two or three years.

If, by running plants at maximum capacity, by increasing the efficiency of labor, by introducing economies in management and methods, expenses of production are reduced, there can be no doubt that prices can decline. And with the decrease in the volume of working capital thus ensuing there would occur a resultant decrease in the volume of credit currency in actual circulation.

With the recovery of agricultural production throughout the world the price of wheat may well be substantially lowered, with a resulting decrease in the cost of bread, and sympathetically of foodstuffs generally. It is conceivable that with a lowered cost of living wage-earners might consent to a reduction in monetary wages—in which event the expenses of production would decline generally. This would reduce the volume of working capital required by business, and the volume of bank loans would accordingly be lessened. There would thus be a coincident reduction in selling prices and a contraction of the volume of circulating medium. The steps by which the business world moved during the war from a lower to a higher price level would thus be retraced.

It is possible, also, that as soon as European countries get on their feet industrially and begin to sell goods in the United States in payment of obligations incurred during the war this outside competition may force domestic prices in many lines to a lower level. It will be recalled that internal competition did not in most cases force prices down in the first six months following the armistice, for the reason that industries tacitly agreed that prices should be maintained at a level high enough to permit the high-cost concerns to make profits. The entrance of foreign goods into our market, however, might undermine this price-maintenance policy and force a real price-cutting competition among domestic concerns as well as between domestic and foreign establishments. It needs emphasizing here that the price reductions would be brought about by lessening costs through concentrating production in the most efficient plants.

In view of the very high costs of manufacture abroad it is as yet uncertain how powerful this foreign competition will prove within the next year. The depreciation of the exchanges is such, however, that I think we may look for a rapid decline in exports and a steady increase in imports. At present exchange rates, the costs to Continental importers, are increased from 30 to 90 per cent, while export prices from those countries are accordingly decreased a like amount. Even sterling exchange is at a discount of about 14 per cent. The only means of preventing still further declines in the exchanges is the extension of very large credits to Europe. I venture the opinion that nothing adequate in this connection will be accomplished.

### IV. WAGES AND THE PRICE-LEVEL

But there is another vitally important angle to the problem, the tendency of which is unmistakably in the opposite direction. Laborers will resist with all the power at their command a reduction in wage-rates even after the cost of living has fallen. They argue that if wages are to be reduced as the cost of living falls the laborer will be forced to content himself with an unchanging standard of living. Only in case wages remain high while the cost of foodstuffs falls can the laborer increase his standard of living—an increase to which he deems himself indisputably entitled now that the war is over. Labor is, moreover, now strongly enough organized in most lines to resist effectively any general reduction in wages. Because of augmented power, born of the war, labor has become the controlling factor in the level of prices. It even affects in a vital way the foreign trade considerations enumerated above, because Europe is apparently on a permanently high-wage and hence high-operating-cost basis.

From the standpoint of labor as a whole it is obvious that there is little to be gained by maintaining a high level of wages, which only results in a correspondingly high level of prices.[1] Each

[1] It may be argued that, since wages are not the only factor in cost, the maintenance of wages does not necessarily imply a complete maintenance of prices. In view of the shortened working day, however, it is not improbable that the high costs of production are largely due to the labor factor.

particular group of laborers naturally feels, however, that it should maintain its level of monetary wages while prices are falling, or raise its wages while prices remain stationary. Any particular group would of course gain at the expense of other groups, provided the other groups were content to sit supinely by. For the first time in our history, however, labor as a whole—substantially speaking—is in a position to resist decreases, if not to command increases, in monetary wages.[1]

High operating costs cannot be reduced to pre-war levels so long as monetary wages remain at war levels. It is not to be inferred that unless wages fall there can be no fall in prices. Increased efficiency of production, as already noted, could effect a fall in prices despite the maintenance of monetary wages. No revolutionary drop could occur, however, unless monetary wages were reduced. And so long as operating costs remain high it will require a large volume of bank loans to finance production; hence the volume of bank currency, as well as prices, will remain large. The quantity of currency is, however, obviously a result rather than a cause of the price level.[2]

### V. SOME RESULTS OF THE NEW PRICE LEVEL

While the prevention of a fall in prices, by the refusal of business men to cut rates in open competition for a decreased volume of trade and by the fear of reducing monetary wages, has given a

[1] In economic discussions of the minimum wage it has been customary to point out that universal wage increases would result in a general increase in prices, thus leaving labor with the same real wages as before. There is here a plain recognition that the price level may be changed by forces operating on expenses of production. In view of the general acceptance of this doctrine, it is the more surprising that monetary theorists have so persistently viewed the price level as merely an exchange phenomenon. Incidentally, it may be observed, in the light of the analysis in this paper of the relation of increased operating costs to the expansion of bank credit currency, that the assumption in minimum wage discussions that prices can always promptly be raised as wages are increased fails to reckon with the quantity of money and credit available for the increased working capital required. Under conditions where the supply of loanable funds is exhausted it would be impossible to raise the general level of wages and prices, because further expansion of the currency is impossible.

[2] Other forces tending to prevent a decline in prices are revealed in Section V below.

temporary stability to the social order, it has not solved the problems of post-war adjustment. On the contrary, it has given rise to many very difficult issues which may yet result in serious social and industrial disturbances.

The first of these problems is the dilemma of the fixed-income classes, that is, people receiving their incomes from savings and investments. At the present level of prices the value of savings accounts, of insurance, and of bond investments is just about half what it was in 1914; and there is no possibility whatever of a readjustment of incomes from such sources. Tragic is the only word that adequately describes the condition of many thousands of American families dependent in whole or in part upon accumulated savings. Most of them do not as yet fully realize what the war has meant to them.

The second problem relates to the salaried class. There is some possibility here that compensatory increases of incomes may eventually be secured by organization or in consequence of a sense of justice on the part of employing institutions. In the case of educational and charitable institutions, however, whose revenues are largely derived from endowments, the funds of which are invested in securities yielding a fixed income, there is little possibility of an early increase in salaries that will offset more than a fraction of the increased living costs. In the case of the public schools, state institutions, and the public service it is an entirely safe prediction that the tax-groaning public will not consent to a sufficient increase in revenues to permit an adequate adjustment of salaries.

Not only have the incomes and past savings of the salaried classes been cut in two, but future savings must in consequence of the changed price level be double those of the past if the same preparation for old age is to be made as formerly.[1] From the standpoint of the living conditions of the educational and public service fraternity this is deplorable enough; from the standpoint of public welfare, which in a democracy so largely depends upon adequate universal education, it is far worse. Never was there

[1] There appears to be little recognition of this phenomenon as yet. Perhaps it is fortunate for the peace of mind of those who have troubles enough already.

a greater burden placed upon the schools than now, and never was there a greater need for attracting efficient men and women into the profession. The price system, however, is at present forcing many out of the profession, and it is effectively curtailing the future supply. This analysis obviously applies with equal force to the public service.

Even among laborers the wage advances that were obtained during the war were extremely unequal, and the wage increases that have been received since the war have varied in proportion to the strategic importance of labor groups. The inequalities that exist thus give rise to a never-ending series of demands for increased wages.

A third problem is that of the public utilities. The increased operating costs of both steam and electric railways has been such that our transportation system is already on the verge of bankruptcy. The electrical railways of the country have, moreover, not been allowed to raise rates sufficiently to compensate for the increased expenses of operation, and, unlike the steam railways, having no other source of funds during the war, it has been impossible for them to raise the wages of their employees proportionally to the increased cost of living. Electric railway employees are accordingly now demanding increased wages. It would require a substantial increase in the rates of transportation generally, however, to meet present operating costs, much less increased operating costs. In view of the attitude of the American people with reference to transportation rates, it is an open question whether the steam and electric railways of the country will be granted an increase in revenue sufficient to permit their profitable operation.

And the worst of it is that our problem here is not merely a case of increased operating expenses. An enormous volume of new construction must be shortly undertaken if our transportation agencies, and public utilities generally, are adequately to perform their indispensable functions in the national economy. Two billion dollars a year for several years is a conservative estimate of railroad-construction requirements at the present cost level; the electric railways, according to the President's commission,

require a billion of new development the coming year, and similar amounts are doubtless necessary for other public utilities. The cost per unit of work is now nearly double what it was before the war, and the interest rates are at present from 7 to 8 per cent as compared with pre-war rates of from 4 to 4.5 per cent. If the transportation and utilities companies generally are unable to meet present expenses, when fixed charges are largely on the basis of pre-war costs, what rates will be required to permit returns on the basis of present construction costs?

In case increases in rates are soon granted sufficient in amount to compensate for increased operating costs (leaving out of consideration now the new construction) and to permit further wage increases, the result would be to set in operation another powerful force leading to an increase in the operating costs of industry generally. Increased transportation costs will increase the prices of construction materials and manufactured goods of every kind, thus still further handicapping the building industry and still further increasing the cost of living. And an increase in fares on both steam and electric railways and in the rates for water, gas, electricity, etc., would serve to increase the cost of living to the wage-earner and salaried man, and thus necessitate still further wage and salary advances.

This maintenance and actual increase in the price level is, moreover, a serious barrier to extensive private building operations, a barrier likely to persist for many years. It is one thing for business men, when once they have reached the conclusion that prices are not going to drop immediately, to buy raw materials for manufacture or finished goods for sale during a period of three or four months; but it is quite a different thing for them to assume the burden of excessive fixed charges. This is true even though a reduction of prices appears but a remote possibility.

A plant or other building constructed at present costs is tremendously handicapped as compared with plants constructed before the war, because of the assumption of excessive overhead charges for a period of indefinite duration. Under conditions of diminishing costs a new plant is normally in a position, by virtue of increased size or improved processes, to undersell the older establishments.

But because of the change in price level new establishments now find a handicap which in many cases will more than offset the possible advantages of increased size and improved methods. The original costs are certain to be, in nearly all cases, much higher than those of existing establishments; hence the new methods must be greatly superior to the old if competition on even terms is to ensue. It is true that in time dire need will compel new building; but society will have to assume the added production costs by consenting to an increase in the prices of the products of such establishments. In a word, as a result of the price changes industry generally has been abruptly removed from conditions of diminishing cost and placed under conditions of increasing cost. The result of this is at once to retard seriously the development of new industry and to prevent the normal fall of prices incident to industrial progress, if not to necessitate a gradual increase in prices.[1]

It may be noted that this competitive handicap of new enterprise tends to be overcome to the extent that existing establishments change hands and are thus capitalized on the new price level. The importance of this in reducing the competitive disadvantage mentioned should not be overemphasized, however; because a relatively small percentage of existing establishments completely change hands except over a long period of years. And in the case of corporations changes in the value of securities are not reflected in the financial accounts of the company. It is to be noted also that the effect of such new capitalizations as occur would be to help sustain the present level of prices.

In the case of apartment buildings constructed by contractors, the risk of being unable to sell at a profitable figure is a serious deterrent to ordinary operations. Home building, where profit is not the controlling force, provides a partial way out of the dilemma;[2] and residence hotels, which solve the problem of domestic help, for those who can afford to have such a problem, are also a

[1] This situation is of real interest to investors. For some time to come industries enjoying pre-war fixed charges will be in a much stronger financial position than new industries. This fact may also have a bearing upon the rapid advance in stock values of existing establishments.

[2] According to S. W. Straus, the home-building campaign has, however, been a failure.

way round. But for the typical denizen of the city flat these resorts bring no relief. Higher rents—estimated at an increase of 40 per cent over present rates—are regarded by builders as indispensable. But so great an increase in rents would very likely be the straw which breaks the consumer's back. At any rate, this possibility is an effective deterrent to normal building operations.[1] But if rents on apartment buildings could be raised sufficiently to make building profitable, it would only render the cost of living less tolerable; it would lead to lessened purchasing power in other directions and to still further demands by labor for compensatory wage increases.

It is worthy of note that a further deterrent to present building also lies in the possibility in the minds of many builders and financiers that prices may decline within the next few years, if not immediately. In the event that this occurs, both the cost of materials and the improvements in method in the new establishments would be operating against the competitive possibility of concerns built during the interval of maximum prices.

## VI. CONCLUSION

In conclusion, I think we may say that it was organization on the part of industries and on the part of labor that prevented a substantial decline in prices in the first months following the armistice. It seems to me not improbable that under the conditions that obtained twenty years ago, with industries less effectively organized and with unionism much less powerful, prices would have materially declined in the spring of 1919. Now whether the present vicious spiral of price increases (in manufacturing lines) will be broken largely depends upon whether the organization of industry and of labor respectively can be held together in the face of all contingencies.

For instance, with the reserves against Federal Reserve notes and deposits combined down to about 38 per cent, in the Federal Reserve bank of New York, and down to less than 48 per cent

[1] There are many loose statements afloat in press channels to the effect that we are now having in fact a great building boom. The truth is, however, that the actual volume, in spite of the great need, is, in both industrial and apartment lines, far below that of normal years.

in the Federal Reserve banks as a whole, a credit collapse, with attendant business depression, is not an impossibility. It may be noted, also, that a financial collapse in Europe, regarded by many students as not improbable, would have disastrous effects upon American industry.

A depression may also be precipitated by industrial warfare. Lessened efficiency of labor, strikes, and lockouts may well succeed in producing chaotic conditions. With basic industries such as mines, railways, and public utilities unable to function normally—due either to financial or to labor difficulties—there is certainly ample ground for apprehension over the industrial outlook.

In the face of an industrial depression of considerable duration, would business enterprises be able to resist price cutting in the hope of preserving markets? Would labor, in the face of a great volume of unemployment, be able to resist wage declines? In the old days, under such circumstances, individual businesses and individual workers struggled to save themselves as individuals. What would happen under present conditions? I hazard the guess that a serious industrial depression would serve to break down the resistance to price declines on the part of both labor and capital, and precipitate a substantial fall in values.

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# NOTES

## BANKING INFLATION AND REDISCOUNT RATES

How serious the inflation of banking credit has become can be seen from figures and estimates prepared by the Federal Reserve Board and published in the *Federal Reserve Bulletin* for October. The figures in question represent the situation at the close of the last fiscal year on June 30, 1919. Of the 16,304 million dollars of Liberty bonds then outstanding, national banks owned about 770 millions, while other member banks reported a net investment of 293 millions in those securities. It is estimated that the banks outside of the Federal Reserve system held about 400 millions, making the amount held by all the banks on that date somewhat less than 1,500 millions, or about 9 per cent of the total outstanding. Of the Victory notes the amount owned by the national banks on June 30 is reported as 405 millions; other member banks gave their holdings of these notes as 192 millions, while the banks outside the Federal Reserve system, it is estimated, held about 250 millions of these securities. About 847 millions or 25 per cent are thus shown among the banks' holdings. Of the 3,634 millions of Treasury certificates outstanding on June 30 about 1,760 millions belonged to the banks. Thus an estimated total of 2,495 or say 2.5 billions of war paper was held by all the banks of the country.

Taking the figures as a whole, it would seem that at the close of the fiscal year there were at least 6.5 and probably 7 billions of war obligations in the banks. Today there are at least 500 millions more than this figure. This showing of inflation is being reflected in the weakened reserves of Federal Reserve banks, which at the close of October are well below 50 per cent, or under any figure reached during the war.

A decline of reserves and an increase of note currency in most of the European counties during September and October again illustrate the growth of inflation. In the stock market inflation is being displayed in a very high renewal rate for call loans, exceeding in its extremes during the month of October the extremes of fluctuation during disturbed prewar years.

As a remedy for this evil in our own country the natural suggestion first to be made is that of raising the rate of rediscount at Federal Reserve

banks. Those who advocate such a course naturally do so because they believe that an increase of rates would tend to conserve funds, raise reserve percentages, discourage unnecessary loans, and reduce speculation. This is the normal effect of an advance of rediscount rates in ordinary times. The discussion of the subject now in progress in Washington, however, has to take account of a number of unusual factors. Of these, the most immediately pressing is the fact that the Treasury Department, although it has closed the series of Liberty loans, is still getting great sums of money from the banks. An advance in rediscount rates would result in a largely increased cost of conducting government finance, since it would oblige the department to meet the increase by advancing its rate of interest on certificates of indebtedness in very much the same measure as the rate on rediscounted paper. This means of course that the expense of the public debt service would be considerably augmented.

This increase, taken alone, is not a conclusive reason against such a course of action. The problem, however, involves other elements. Most important is perhaps the doubt whether a mere advance in rediscount rates would check the use of reserve-bank funds for speculation. Probably it would not, and hence it is suggested in influential quarters that what is really required is not so much an advance of rates as it is action designed to cut off largely or wholly the discounting of paper whose proceeds are intended for use in speculation. The application of such a rule would be complex and difficult, but its effects should be more decisive than those of an advance in rates.

Increase of rates, however, will probably be necessary for other reasons. The time has come, as is indicated by the Federal Reserve Board in a statement on the subject, for restoring the functions of the central reserve banking mechanism. Since the organization of the reserve system there has been only a period of about four to six months just prior to the entry of the United States into the war when there was a really "effective" discount rate at Federal Reserve banks. All indications point to a belief that the time for restoring such an effective rate is recognized as having arrived.

## LIMITATION OF EXPORTS

The question what we shall do with regard to exports has been urgent for a great while, practically ever since the conclusion of the peace conference, but no consistent policy of action regarding it has been developed in any country or group of countries. Great Britain, ever since she ceased to borrow directly of the United States Government, has been endeavoring to increase her net exports in order thereby to settle her obligations for interest and instalments of principal abroad. She has had a measurable success, but no more, while other European countries have not even made the effort, but have continued to borrow wherever and in as large sums as they could. Great Britain's withdrawal of artificial support for exchange resulted during the summer in a surprising fall in the value of sterling, a quotation of 4.12 being at one time established. Other European exchanges have fallen much more severely. Low valuations of foreign currency in dollars have tended to restrict exports from the United States, a situation apparently desired by the British authorities, and perhaps by those of some other nations. American manufacturers and bankers, on the other hand, seeing some valuable branches of manufactured exports on the decline, have been demanding the establishment of "export credits," by which they mean in the last analysis action designed to guarantee our shippers against losses (certainly losses due to depreciation of exchange) in trade with other countries.

Review of trade conditions during the past three years shows that practically our entire "favorable balance" was covered by issues of government securities. This fact made foreign trade during that period extraordinarily safe, while the high prices, lack of competition, and nondiscriminating demand abroad made it unusually profitable. Since the cutting off of Treasury advances to foreign countries, the basis for such subsidized trade has been cut away. Various interests have appealed to the Treasury, the Federal Reserve Board, and other authorities for its restoration, but there has been thus far a well-founded hesitation to take any such step. The character of the situation domestically is, such as to raise the gravest doubt whether it is wise or fair to the consumer, or safe from the public point of view, to continue an artificial support for export trade which merely takes from the home market goods which are needed here to meet legitimate domestic demand, while consumers, of course, have to supply the credit which is required to carry the guaranteed advances to foreigners. The export trade and foreign exchange questions are thus seen to be integral parts of the general problem of wages,

prices, and labor in the domestic market, which go to make a part of the question of "unrest" now so troublesome.

Some momentum has recently been attained in the plans for foreign financing. A loan of $250,000,000 has been made to Great Britain, of which $135,000,000 constitutes a renewal of a loan contracted in 1916. It is of interest that following this loan the expected Belgian loan was canceled. It is now an open secret that Great Britain made the Belgian loan, and at a rate lower than that on the British loan from the United States. This was apparently done on the principle that trade follows finance.

The international foreign-trade conference held at Atlantic City last month served to clear the air in the matter of foreign credits. There had been no end of speculation as to the sums required by the various European countries, ranging all the way from Tardieu's statement at the time of the armistice that France along required from 10 to 15 billions of dollars down to more recent estimates of a few hundred millions for all of Europe. The conference made it clear that Belgium, France, and Italy actually need about $1,500,000,000 in credits during the next two or three years. It still remains to be seen, however, whether these countries can offer sufficient guaranties to make their securities attractive to American investment bankers and, in case they can do this, whether the American investing public can be induced to purchase in large volume the securities of foreign countries.

# BOOK REVIEWS AND NOTICES

*The Regulation of Railways.* By S. O. DUNN. New York: D. Appleton & Co., 1918. Pp. x+354.

The range of topics covered in this book, and the allotment of space accorded them, furnish eloquent testimony to the changed character of our "railroad problem" since the forms were molded into which the conventional texts on the subject were poured. Written before the end of the war, it centers around the question: "What was the matter with our system of regulation before the war and what should be done to furnish a better working basis for control after the war is over?" There are nine chapters on regulation, six on government ownership, and two containing some general proposals for reform. Of the chapters on regulation, four are general in character, discussing: "What Is the Matter with Railway Regulation?"; "Functions of Government in Relation to Railways"; "Commission versus Legislative Regulation"; and "Federal versus State Regulation." The remaining five deal with public policy in regard to rates, valuation, securities, operation, and labor disputes.

In the matter of rates, the author deals solely with the question of an adequate level of rates and reasonable revenues, while the subject of discriminations is dismissed as largely settled, save for the discriminations created by the conflicts in regulation between the states and the federal government. Imagine a book on this subject which never once expounds the theory of "charging what the traffic will bear," nor enlightens the reader as to the subtle differences between "variable expenses" and those interesting "constant expenses" which also vary and which have the unusual mathematical property of remaining twice as big as the variable expenses while still remaining "constant."

Mr. Dunn avoids such technical matters even within the range of the problems he treats; indeed, he avoids them so much that, at times, the reader is hardly put in adequate touch with the real subject-matter. The book is written for the general reader rather than for the close student, and is an excellent piece of general exposition. It is, however rather the work of a temperate pro-railroad advocate than a disinterested study and analysis of railroad regulation.

While admitting the need for regulation and commending some features of it, the author pays more attention to the evils involved.

Chief of these is the evil of inadequate rates, together with discriminations imposed by conflicting policies of state and federal commissions. Unwise control of capitalization comes next, the trouble being an inevitable result of separate control exercised by the several states over an interstate industry. It appears that in some cases the strictest state can veto the permission given by others for the issue of securities, while in other cases the laxity of one state may permit abuses that virtually nullify the efforts of more conservative states to safeguard the financial operations of properties within their borders. However, the author does not give enough detail to enable the reader to see how and why the system produces such opposite results. In the control of operation there are useless discrepancies between different states and duplications of work between the states and the federal government, but the chief evils are the rigid character of legislative rulings and the fact that some are designed to make jobs rather than to safeguard the public interest. In general, commission regulation is preferred to legislative, because more adaptable, more expert, and less exposed to improper motives or undue political pressure, and the federal commission is preferred to those of the states.

As regards valuation, the author considers it irrelevant to the question whether rates are high enough to enable the roads to raise needed capital. However, he discusses the central points in the theory of valuation, advocating cost of reproduction with concessions to the doctrine of going value based on earning power. The general treatment of the theory of valuation and fair return is somewhat disappointing, and appears not to reach bedrock. For example, if the standard of reasonable rates be the ability to market securities, this depends on the policy followed in the control of security issues, as well as on the rates themselves. Difficulty in raising capital may arise from a bad system of security-issuance rather than from inadequate rates. As for the American situation in the years preceding the war, earnings made a better showing than during most of the previous history of the roads, and the logical inference is that the difficulty of raising capital had other causes than inadequate earnings alone. With the percentage of bonds in the capitalization unduly swollen, as it admittedly is, the plea of making more bonds salable call for unreasonably large returns on the attenuated equities of present stockholders. The raising of new capital could, however, be harmonized with various rates of return to previous security-holders on various valuations of their property, by adjusting the price at which new securities are to be issued. This would often

involve selling stocks and bonds at a discount, a thing which Mr. Dunn himself says should be permitted. If the control of security issues were co-ordinated in this way with the control of rates, the requirement of raising new capital need not be incompatible with an inquiry into the fair value of the properties for purposes of rate-fixing.

Another thing which the author quite rightly stresses is the inevitable gap between rich and poor roads in semi-competitive relations with each other, a matter which has not been adequately treated in previous books on the subject. This fact appears in various guises. The discrepancy is seen as a desirable thing, because it furnishes a differential reward to good management, which tends to preserve efficiency even under regulation—this in the section where the efficiency of government ownership is being attacked. It appears again as a necessary evil compelling the allowance of "going value" above the actual investment. And finally it disappears entirely in the author's plan for solving this latter difficulty through huge sectional mergers, each of which is to include all the roads in a large division of the country. There would seem to be some discrepancy between the various parts of the author's argument on this point in that, if his proposed plan were adopted, this particular argument for "going value" and for the superior efficiency of private enterprise would no longer hold. This would not be true, however, of the scheme of combining strong and weak lines into systems that should still compete with each other. Such a plan might diminish the difference between the stronger and the weaker units, but could never eliminate it entirely.

Mr. Dunn's various proposals for dealing with the problem will probably be met with varying favor. There is to be a series of regional combinations of roads under federal incorporation, with the Interstate Commerce Commission exercising control over all rates, and also whatever control can be exercised over wages and labor disputes. The public should have minority representation on the managing boards of the companies (why not also give labor minority representation?), and there are to be either separate regional commissions, or else advisory councils after the fashion of Germany, Austria-Hungary, and France. A minimum rate of earnings, say 5 per cent, is to be guaranteed, and profits above this minimum divided with the government. Probably the proposal for a guaranteed return, together with the completeness of the regional consolidations proposed, are the most dangerous features of the plan, but the argument as a whole is well worthy of consideration.

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*Co-operation and the Future of Industry.* By LEONARD S. WOOLF. London: George Allen & Unwin Ltd. New York: Macmillan Co. Pp. 141. $2.00.

Students of social reform programs are familiar with the rapidity with which the Rochdale co-operative movement lost the revolutionary zeal and idealism of its Owenite founders and became practical, sensible, and worldly in its aims. Mr. Woolf has set himself the task of calling back the early vision and lifting the movement again to the millennial heights. He sees in consumers' co-operation the best chance for a re-organization of industrial society along satisfactory, i.e., democratic, lines. After a brief introduction on the social unrest follows a very informative historical and descriptive sketch of co-operation in Great Britain. The author then discusses (in chapter iii) the fundamentals of the organization as "A Democratic System of Industry." Chapter iv treats of the labor problems of the movement, the relations of the consumer-owners to the producer-employees, and chapter v of the changes necessary and difficulties to be overcome in extending the system over the whole field of industry (as far as the essentials of life are concerned) and transforming it into the co-operative commonwealth of prophetic dreams. The last chapter, on "Co-operators and Political Action," draws an outline picture of the society of the future and discusses the relations (in England in 1918) between co-operation and other working-class programs.

The book is of course optimistic, but is extremely fair in tone, candid, and even critical in its optimism. The points of objection or disagreement raised in the reviewer's mind cut rather deeply into the fundamental presuppositions of social reform. The author's perpetually reiterated contrast between production for the use of all and production for the profit of the few seems overdrawn. He does not recognize that competition theoretically gives control to the consumer, or inquire as to how far or why it fails to do so in practice. In fact the relegation of the present system to the discard is taken too much as a matter of course. Nor are the ultimate problems of the proposed substitute system more than touched—many not so much as that. Nothing is said of property, education, inheritance, or family relations under the new order; the inherent difficulties of voluntary democratic control are very lightly passed over, and the proposal to distribute the heavy and disagreeable work by conscription on the basis of a physical examination will fail, we fear, to appeal strongly to large circles. The general idea of a large degree of regimentation in the production and distribution of

things essential to health and efficiency, combined with liberty in "luxuries," is probably what we shall have to come to; but Mr. Woolf has thrown little light on the solution of the staggering problems of detail which swarm into view when we consider carrying out the suggestion.

Perhaps the most serious criticism, and one cutting most deeply into fundamentals, is the author's much emphasized assumption that the sole legitimate aim of economic life is the consumption of goods, that as a starting-point all industrial productive activity must be recognized as an evil, though a necessary one. Our older economics ran in terms of human needs; latterly we are making more use of the term "wants" instead; it is time to face the fact that even this concept is too much "ontologized." We really know very little about human motives, and still oversimplify them disastrously in nearly all discussion. Some criticism of the existing order amounts virtually to contending that a game is unfair if anybody comes out ahead. Real human *needs* have in a sense a first place in our thinking; but not only is it impossible to tell definitely what these are, but however defined, their place in the problem of social organization is after all a relatively small one. The larger problem is to arrange things so that people will find their lives interesting and will grow into such personalities that they can respect themselves, admire others and enjoy their society, appreciate thought and beauty, and in general look upon creation and call it good. Question may be raised as to just how much will be contributed to this end by giving the worker any new sort of suffrage (in addition to that which he already has as a voter and free chooser of his own work and expenditure of its proceeds) for the control of industry.

The book is very well written indeed, and makes interesting and stimulating reading. It is unfortunate that it seemed necessary to print it in such small type. It has a good index, and is a useful source of information in regard to the British co-operative movement, outside of its missionary appeal.

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*Employment Psychology: The Application of Scientific Methods to the Selection. Training, and Grading of Employees.* By HENRY C. LINK, PH.D. New York: Macmillan, 1919. Pp. 435.

By virtue of his connection as psychologist with the Winchester Repeating Arms Company, the author enjoyed unusual opportunity

to investigate and demonstrate the feasibility of psychological methods in industry, and he writes this book as a record of his findings.

In Part I he describes a number of tests that have been useful in selecting workers of various sorts: assemblers, office clerks, stenographers, comptometrists, tool-makers. He discusses the technique of giving, scoring, and evaluating tests, and frankly exposes their limitations and possibilities in vocational psychology. It is gratifying to observe that the author used, as far as possible, tests that had been already developed and refined in the psychological laboratory, holding to the doctrine that the need is not for more tests, but for the establishment of the significance of tests in terms of correlative practical achievement. In circumstances requiring deviations from this rule Dr. Link devised several ingenious tests, among which is an improved form of the Bogardus fatigue machine. A novel departure that may mark a significant step in the scientific study of factory operations is his portable laboratory.

In Part II the author treats another group of problems less closely related to psychological tests. He discusses trade tests, with numerous examples; job analysis; the vestibule school; and presents prophylactics against the fallacies of the observational method of selecting employees. This breadth of topics shows that the author recognizes the place of psychological methods in the entire scheme of employment; that he does not hold to the obsolete conception of the field of employment as limited to the mere act of hiring and rejecting applicants. The training of new employees, keeping accurate records of their activities, transferring them when advisable, devising methods of promotion, are all phases of the employment problem. Fitness for an occupation is a blend of innate ability and training. The latter can be supplied by the employing firm. Consequently much stress should be laid upon the educative operations of the firm. The author opines in his final chapter—a somewhat philosophical dissertation entitled, "Employment Psychology, Labor and Industry"—that "the higher the education, the lower the turnover."

Part III contains the author's views upon the retention of employees and the scientific methods of measuring and recording their productiveness. Records consisting of objective measures of productiveness and subjective estimates by overseers should be a permanent part of the employment department.

The concluding section, Part IV, consists of a collation of plans for personnel work. And to show that the author is not prejudiced

toward any single device, he submits a "Practical Combination of Employment Methods." It is "practical," too, for it recognizes the antipathy commonly directed against scientific studies in industry, curiously enough, on the part of both employer and employee. The fault with the former is that he fails to grasp the real point of scientific procedure. The author ascribes this to the obsessing power of the "dramatic instance." "'That may be true,' one hears an individual say after an experiment or a follow-up covering fifty or a hundred applicants has just been explained to him with the correlations which were found and the high percentage of agreement between the verdicts of the tests and those of the foremen or those obtained from actual production figures, 'but there is Miss———. Now I know her and her work very well. She has been with the company for five years and during that time has given perfect satisfaction in the place where she works; and yet, according to your tests, she would not be considered good for the work she is at.'" Such criticism is typical of the power which isolated and personally known cases have over the minds of certain individuals—one of the greatest obstacles that the pioneering psychologist has to overcome.

The employee, too, is traditionally suspicious of scientific investigation in his domain, seeing in it only an effort to exploit him. Both these individuals were evidently placated by the author. For he apparently demonstrated the value of his methods to the employers, and tactfully created a *rapport* between himself and the workers to such an extent that "the men were genuinely pleased to feel that their work was important enough to merit careful study." The attitude of the employee is further treated in a chapter that should be read by every employer: "The Applicant's Point of View."

If there is one word upon which professional psychologist and industrial layman will unite on characterizing the book, it is sanity. The former will see behind it a long period of laborious research; the latter will recognize a determined effort to grasp industrial problems in their actual setting and to develop practical methods of handling them. To both these men the author proves his contention that psychological methods are the most valuable means of selecting fit applicants for positions, and that the methods he advocates are sound and sensible. Besides serving as the pattern for much of the employment psychologizing that is to come, the book will help executives (the higher, the better); will constitute a handy manual (indeed, a textbook) for employment managers; will be a valuable source book for university courses in

personnel work; and will inform interestingly and reliably those who want to know how much there is, anyway, to all this talk about psychology.

A critical statistician might point to some of the data for which few cases were measured. But the author acknowledges this discrepancy in ways that show him to be fully aware of the limitations of pioneer psychologizing. One might also raise the brows over the frequent reference to 0.50 or 0.60 as a "rather high index" of correlation, without further qualification or confirmation. One would like to have seen the evaluation of tests used in groups, demonstrated by means of partial correlations. Another lately developed device was neglected in the failure to use the Pearson formula (Biometrika 1907) for finding the point of reference or standard of satisfactoriness.

A psychologist-reviewer, however, is inclined to be lenient and laudatory toward a work carried out so skilfully and conscientiously as this of Dr. Link's. Anyone who has faced the problems of employment psychology knows what disheartening obstacles abound, and inclines toward sympathetic appreciation of a colleague who, though fully cognizant of the difficulties and misunderstandings that attach to scientific pioneering, is still intrepid enough to search for facts and methods and lay them freely before a critical world.

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*The Redemption of the Disabled.* By GARRARD HARRIS. New York: D. Appleton & Co., 1919. Pp. xxvi+318.

To the large number of students of the problems of rehabilitation of the disabled, whether injured in war or in the pursuits of peace, this book will be welcome indeed. The author has almost a clear field. Few books have been written on the subject, and the generous production of periodical articles and monographs serves rather to confuse than to enlighten the reader who seeks to learn what principles have been developed and how these principles are being put into practice. Douglas McMurtrie, director of the Red Cross Institute for Crippled and Disabled Men, in his *The Disabled Soldier* (New York: The Macmillan Company, 1919) aims to present for the general reader the theory and practice of vocational rehabilitation, and covers much the same ground as chapters iv to xiii of the present treatise with regard to the schemes of all the belligerents for the rehabilitation of their disabled men. As

Mr. Harris discriminatingly says in his preface, however, there exists a need for "a comprehensive chronicle of the rise and development of this movement in the United States to its present status," and accordingly his work is an attempt to furnish a record dealing with the whole subject, and particularly with the acceptance of the fundamental principles and their development in this country.

The introductory chapter, by Colonel Frank Billings, of the Surgeon General's office, describes the organization for the care of the war casualties and the program of physical and functional restoration of disabled soldiers in the military hospitals. A large part of the book, chapters xiv to xxiv, consists of an exposition of the Vocational Rehabilitation Act, signed by the President on June 27, 1918, and of the plans and policies of the Federal Board for Vocational Education, the organization through which the law functions. Since Mr. Harris is connected with the Board in an editorial capacity, as Dr. Prosser points out in the foreword, he is in a position to speak with an intimate knowledge of its work and plans.

The author writes with perhaps a bit more optimism than would one who has had practical experience in certain phases of the work of the Board. Such a statement as the following commands a genial smile and a mental reservation: "As a generality the employers become enthusiasts on the subject of aiding the disabled soldier back into their places as workers and useful members of the civil community" (p. 235).

The most important parts of the book are chapters i–iii, and chapter xxv. Herein Mr. Harris sets forth the philosophy underlying the movement for the rehabilitation of handicapped persons, whether they be the disabled of war or victims of our modern industrial life. After paying his respects to the traditional pension system and the old conception of charity as a national duty toward the disabled soldier, he presents the fundamental justification and aim of the work, restoration, and, as far as possible, restitution to the *status quo ante bellum*.

This is the new conception of the nation's duty. The man is given instead of a "pension" a "compensation" to make good, theoretically at least, his diminished earning power resulting from his disability. Vocational re-education, which in no way affects the amount of disability compensation allotted to the individual, is offered, wherever "feasible," to adapt the remaining capabilities of the man and restore him to civil life in a state of economic independence. Such provisions are made not merely to pay a debt of gratitude to those who have been injured in the nation's defense, though this is a sacred obligation and the impelling

motive of the liberal provisions which the warring nations have made for their wounded men, but rather to meet the need for the conservation of our human resources and to satisfy the demand for social justice. It is commonplace but none the less worthy of mention that, without re-education and placement in employment, disabled soliders would gravitate to the social scrap heap, a drag on society, as too many have been allowed to do in other wars. The victims of modern industry, however, as Mr. Harris points out, greatly outnumber those injured in the war. No program of human conservation can avail much until it includes within its benefits this larger group known as the industrially handicapped. The restoration of the disabled to successful employment is a social investment certain to yield large dividends in the economic well-being of the individual and the enhanced prosperity of the nation.

In all, one lays the book down with a nod of approval and with the feeling of regret that such portions of it as chapter xxiii, entitled "The Duty of the Home Community," and chapter xxiv, "A Sustained Public Sentiment," are not published in some more popular form. Certainly it is none too much to affirm that the book is a distinct contribution to the literature of the subject.

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*The Shop Committee: A Handbook for Employer and Employee.* WILLIAM LEAVITT STODDARD. New York: Macmillan Company, 1919. Pp. 100.

The author describes the inception of the shop-committee movement, the organization and operation of such committees already working, and the relations of this plan to existing labor unions, and offers many suggestions for anyone desiring to instal such a system.

Two classes of committees exist: the shop committee which represents a small unit of workers, and the general committee which acts as a court of appeal from the lower committees and decides matters pertaining to the plant as a whole. The districting of the plant and grouping of the employees into correct representative units is the most important preliminary problem. Elections should be carried on in the plant where possible, and with little interference by the management. Fair and uniform rules of procedure are necessary for the success of the plan. The committeemen, in order to give a high standard of service, should receive compensation for the time they are absent from their

work. The execution of the federal War Labor Board's awards at the Lynn and Pittsfield, Massachussets, plants of the General Electric Company give an insight into the actual operation of the system. There must be mutual confidence on the part of employer and employee.

One of the most pertinent questions raised is, "Will the shop-committee plan encourage unionism?" The author believes it will. The shop committee, signifying the *Idea* of joint shop and industrial committees, is a substitute for trade unionism and will be welcomed by both employers and unions.

The book gives a clear-cut view of the system from the standpoint of employer and employee. In view of the discussion of collective bargaining at the recent industrial conference at Washington, the book should receive additional attention.

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